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2003

ALICE CARLI

BINDING & CARE OF PRINTED MUSIC



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MUSIC LIBRARY ASSOCIATION

Basic Manual Series, No. 2

The Arthur Friedheim Library
Peabody Conservatory of Music
Baltimore, MD 21202

**Music Library Association
Basic Manual Series**

Jean Morrow, Series Editor

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Binding and Care
of Printed Music

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Basic Manuals Series, No. 2*



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and
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2003

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Preface

Consider the difficulties of maintaining a music score collection: scores can be difficult to acquire, difficult to catalog, difficult to bind, difficult to shelve, and difficult to find in the catalog and on the shelf. We surmount these challenges daily because we and our patrons love the music, but our shrinking resources, both of money and of time, require ever more painful decisions—and ingenious solutions. This manual focuses on the particular problems of binding music scores and of physically maintaining a score collection for the gamut of uses to which it may be put by library patrons. Many other resources exist that deal with the binding and conservation of books, and this manual is no substitute for them. However, it is intended to be used on its own to carry out binding and conservation procedures that are specific to scores. Binding and conservation practices differ very widely from one library to another, not only because of different traditions and levels of staff expertise, but also because of different needs and resources. What works in one library may or may not work in another, and while some ideas in this manual will be new to some libraries, others will certainly be old hat, in some cases perhaps superseded by better designs. The information in this manual is primarily directed to the needs of music librarians with little conservation background and to library conservators with little music background. Some people will find the manual helpful and illuminating in many areas; others are encouraged to read through it for whatever new ideas it may hold for them.

Apart from the particulars of practice, the fields of library conservation and music publishing are both developing very rapidly. The balance between paper and electronic means of storing and using musical information is shifting, and much of the material in this volume may one day be relegated to the use of academic libraries dedicated to the preservation of obscure composers and editions. Once the general-use electronic music stand enters the mass market, one basic musical fodder of library binding departments—pamphlet-bound repertory scores with separate parts—will begin to decline, first at conservatories and then elsewhere. Although paper scores are even less likely to go out of use entirely than paper books, the proportion of resources dedicated to their conservation and preservation may have to change radically, in ways that will directly affect the formulation of “best practice” at any given library. The author’s aim throughout this book is to present practices developed to balance cost effectiveness with archival soundness for binding and preserving musical scores. She invites any questions and comments about these practices and welcomes any alternate solutions.

Terms that appear in either the glossary (appendix A) or the supplies guide (appendix B) are italicized on first use. The term “text” is used throughout this manual to refer to alphabetic text, while musical notation is referred to as “music.” As with any manual written to be used as a substitute for face-to-face instruction, the information supplied in the procedures tends to be very dense, even more so than may appear at first reading; it is very easy to miss an important detail. Read through the instructions for any procedure very carefully, visualizing each step, before putting the procedure into actual practice. It will also be helpful to reread the instructions carefully after carrying out the procedure several times. Note what changes you have already made in your own technique and evaluate them in the context of your own work situation. Some will be valuable adaptations, some will be errors that are better to catch early before they become bad habits. No book can ever substitute for instruction in person, but the author hopes that this one will help librarians gain both specific skills and new perspective on the central issues of the binding and care of music scores.

Acknowledgments

I first wish to acknowledge my debt to Dr. Sion M. Honea, who is the original designer of the Sibley Music Library Conservation Department and is ultimately responsible for much of the content of this manual. Dr. Honea's integrity and generosity of character and his blend of energetic intellectual inquiry and down-home practicality are a continual source of inspiration to me. I feel both proud and fortunate to have been his student in the art of preserving library scores. Many other people have also been important in bringing this manual into being. First are the students from whom I have had the opportunity to learn about the conservation practices of other libraries during Sibley's annual Music Binding and Conservation Workshop. The people who responded to my inquiries over MLA-L also helped me greatly in developing perspective, as well as with specific ideas that I have acknowledged where I use them in the text. My colleagues at Sibley have not only been remarkably patient during the final weeks of text preparation, but have also worked closely with Dr. Honea and myself over the years on the process of integrating score preservation into the fabric of the library work flow. Finally, I want to thank Linda Barnhart for her editorial suggestions, and Jean Morrow for her immense help, guiding and encouraging me through the process of reworking a very local library manual into a book that can serve a more general audience.

An Introduction to Music Binding

The first step in dealing with issues relating to library bindings for music is to determine the uses to which it will be put, which will vary in some degree from one library to another, and very much among different types of music. Scores used for performance and practice will incur considerable stress on the pages and hinges as well as a high risk of markings and other damage, and loss of *parts*. Performance scores must be able to lie flat (or at least not close themselves), even when resting in a nearly upright position on a stand. This category of use is the central focus of this manual. Scores used primarily for study will also suffer a high risk of markings, but less likelihood of other types of damage. The openability requirement will be less stringent for these scores, though they will still be flattened in photocopy machines. Rare or unusual scores kept for use in comparing editorial practices or for their artifactual value will probably receive extra protection through circulation restrictions and special housing. The use of rare scores tends to approximate the use of rare books, security and fragility being the primary issues. Each of these classes of use invokes its own set of criteria for binding and repair decisions, with the treatment accorded to a rare early edition, as an obvious instance, being wholly inappropriate for a common edition of heavily used repertoire. In addition to use-based criteria, however, score construction also determines what can and cannot be done in binding or rebinding a score.

Standard Formats of Published Music

Factors that determine the type of binding most appropriate for a musical score include the method of page attachment and whether parts or other media are included. Although size is a primary element of format, it almost never makes a difference in how a score should be bound—only in how much trouble and expense will be involved. In evaluating a score for binding, begin by looking for *signatures*—sheets of paper folded in half and attached, to the cover or to one another, through the fold. This is, for excellent reasons, the standard method for printing and binding music. A single folded sheet is called a *folio*. A group of sheets folded together comprise a signature. A group of single sheets that are not folded together must be attached by other means. Signatures sewn through the fold are much more durable than single pages glued to one another and much easier to open flat on a stand than single pages clamped, sewn, or stapled together along one edge. Spiral and comb bindings of single pages open very flat and spiral binds, in particular, are well suited to the needs of a single user (while the plastic of comb bindings degrades and cracks after about twenty years, and friction along the comb tends to make page turns noisy). For library use, however, even spiral bindings are inappropriate. The fact that the pages are perforated along the spine decreases the durability of the binding under heavy use. Also, quite apart from the problem of labeling the spine, the comb or spiral is necessarily wider than the text block, which makes the items hard to shelve, especially in groups. Over the years, stress at the spine from uneven shelving tends to loosen the pages even if the score seldom circulates and the spiral itself does not deteriorate.

Therefore, while signatures should be preserved in the library binding process in practically every case, single-page attachments, including comb and spiral bindings, are nearly always removed, if practicable, and replaced with artificially created signatures. There are standard procedures for rebinding signature-format music for library use (*pamphlet* binding for single signatures, sewing and recasing for multiple signatures) whether carried out in-house or by commercial binderies. The situation for music published in single sheets is

more complex, and sometimes a librarian must choose among several imperfect alternatives. The binding options for the different formats in which music is normally published are summarized below.

One or More Signatures, Hard Cover (“Case-Bound”)

This format is reserved nowadays almost exclusively for monumental editions and other series publications, and opera scores. Since these editions tend to receive fairly respectful use, the music is normally shelved as received. However, the hard-cover bindings applied by *commercial binders* (this term will be used throughout this manual to refer to the firms that bind books for publishers, as opposed to library binders, who rebinding books for library use) are normally greatly inferior to those supplied by library binders. While it is not usually cost effective to send commercially *case-bound* scores for immediate rebinding by a library binder, it is not unusual to find the need to rebinding such a score after a relatively short period of use.

Single Signature, Soft Cover

Fortunately, this is still the standard format for sheet music; it is certainly the best for library use. While there are many options for pamphlet binding, including whether to bind the scores in-house or send them to a library binder, the basic solution is to sew the single signature into some sort of rigid cover. Variations in pamphlet binding are considered in detail in chapter 2, as are options for producing signatures, which will become more important as computer downloads becomes more common for the purchase of scores for library use.

Multiple Signatures, Soft Cover

Publishers normally offer *case bindings* only for certain types of scores, such as monumental editions and operas, as noted above. When a choice is offered, buying a score in soft cover and sending it for *library binding* almost always results in a much better binding than buying the hard-cover edition. It is also normally the cheapest option, since the price difference between hard- and soft-cover editions is usually greater than the cost of the library bind. For texts this may not be the case, since the hard-cover edition may be signature-bound and the soft cover version adhesive bound, and they may use different quality papers. Most music publishers, however, recognize that music libraries will pay more for a signature binding, whether in hard or soft cover, and do provide that service even for soft-cover bindings. Sewing or stapling multisignature scores into the wide-spined “case binders” offered by library suppliers may work for the light use that many of them will receive. However, applying such cheap, uniform binding to a relatively expensive score may affect patrons’ perception of the value of the score and therefore their treatment of it. Stiffening the covers of musical scores (gluing board to the covers, used in some libraries to help with shelving and protection of soft cover texts) is not recommended. Because of the harder use they are likely to receive, that practice is likely to result in the cover tearing off, taking the front page (to which a cloth hinge is usually glued) with it. Library binding is the recommended treatment for all multisignature scores.

Adhesive Bind, Hard Cover

Fortunately, this practice is rare in music publishing, though very common for books and serials. It is not a good idea to wait for an adhesive binding to fail before sending it off to be double-fan bound by a library binder, particularly if the paper is acidic. By the time any but the shoddiest adhesive binding fails on an acidic text block, no further binding, whatever its quality, will last very long. No matter how high the quality of the glue and its application in an adhesive rebinding, the paper itself will give way internally; it will also crack along the spine if *oversewn*. Once an adhesive bind has failed on an older acidic score, the item will be too brittle to rebinding even if the paper still passes the *double-fold test* (fold a small corner one way, then the other; if it falls off, the paper is brittle). Nonacidic paper should be more rebinding, and even acidic paper, if it is rebound right away while new, is more likely to retain the new binding for a long time, since the glue has more chance to adhere to and, thereafter, support sound paper. Therefore, it is recommended that scores that arrive

adhesive bound in hard covers be routinely sent for library binding. Despite this caveat, adhesive binds are normally to be strongly preferred to sewn bindings for attaching single pages together, as discussed below.

Adhesive Bind, Soft Cover

Even in soft covers, adhesive binds are not as common for music as for texts. The recommended binding solution for scores is to send the item for immediate double-fan binding in hard cover by a library binder. (Double-fan binding, a superior type of adhesive bind, is described below under Library Binding Options.) The result will not be as sturdy as a signature binding, but the decision is at least straightforward. Note that another binding solution used for certain text books—sewing the pages together by any of various means—is to be discouraged for music in almost every case, regardless of the size, thickness, or even glossiness of the paper (which can prevent glue from adhering well), because of the difficulty it can cause with openability. Even for texts, openability can be a conservation issue, especially with acidic paper, since it creates stress along the sewing line when the book is opened flat (for example, on a photocopier). It is common to find in a collection that includes many older oversewn scores that those bindings fail after fifty to sixty years because the brittle paper breaks along the sewing. For nonacidic music, adhesive binding becomes more of a user-service issue, since oversewn music tends to shut itself on the stand. Fortunately, one seldom encounters glossy single-sheet scores, except perhaps as contained in periodicals, and these are seldom used on a music stand.

Comb and Spiral Bindings

Established music publishers seldom use this option. Spiral and comb bindings are used primarily for liturgical organ literature, occasionally by established publishers for large format scores in small print runs, and often by very small publishers and self-publishing composers, who tend to be familiar with the need for openability but less so with library needs relating to shelving, rebinding, and sturdiness. If the inner margin between the edges of the holes and the print is sufficient (half an inch or more), the best solution is usually to cut off the holes and have the score double-fan bound. Unfortunately, publishers who economize with perforated bindings usually choose to use very narrow margins as well. For thin scores, thirty-two pages or fewer, with narrow inner margins, one solution is to *guard* (attach along the spine) the pages, holes and all, into folios that can be formed into a signature and then sewn into a *pamphlet binder*. The procedure for that is described in chapter 2. Another option is to photocopy each page onto sturdy 11" x 17" paper, destroy the original, and then either guard the pages into a signature or send them to be double-fan bound.¹ Some organ books are bound in hard covers with the spirals covered by a solid spine, which helps with the shelving and durability issues. These are possible candidates to be shelved as received, if they are not too wedge shaped. However, they will still be more likely to lose pages over the years through use or vandalism, and adhesive binding is a viable alternative, though it will make the score difficult to use for actual church performance.

Staple and Tape Bindings

There is a type of tape binding marketed to composers as “archival” because the tape and its adhesive are expected to stay flexible for a long period. However, it assumes light and respectful use of the music, since the inner edge of each sheet is attached to the tape on only one side, rather than being glued on both sides as in an adhesive bind. The pages pull away from the tape easily, and would very likely do so sooner or later with the type of use library music receives, even if there were a sturdy way to attach the score to a binder. The best solution is to pull the pages free, cut off the gluey edges (it does not work to simply cut the binding off, since the pages are staggered across the tape surface), then glue or fold them into sewable signatures, depending on the amount of inner margin.

Another type of binding used in desktop publishing involves stapling the music together along the spine and then covering the spine with a long strip of tape. This tape tends to be very sticky and unpleasant, and to compromise $\frac{1}{2}$ " or more of the outer cover. On the positive side, using the staples requires extra margin without seriously perforating the spines, making it easier to form signatures. In any case, both of these bindings

can only be applied to pieces consisting of relatively few pages, so that the end result is always a pamphlet bind from guarded signatures.

Internet Downloads

Purchase of music by download is a new option at the time of this writing, and there is little infrastructure now in place for library binding of downloaded music. As this purchase method becomes more popular, it is likely that library binders or other organizations will equip themselves with the necessary printers, software, and legal understandings to produce library-quality bound copies of downloaded music on demand. In the meantime, there are a few issues to consider with regard to printing and binding new music in-house. The music will probably be formatted to print out on single 8½" x 11" paper; it may or may not include adequate margins for attaching the pages together. The simplest option, when possible, will be to print the music double-sided, (or photocopy the printed sheets to produce double-sided results) and glue guard the sheets into signatures. If the supplied margins are too narrow for this the music can be photocopied onto 11" x 17" paper. It will be tempting to photocopy the 8½" x 11" printed sheets onto 11" x 17" double sheets in order to produce signatures without glue guarding. However, this will mean that the grain of the 11" x 17" paper will run the wrong way with relation to the printed music, unless the paper is specially cut. This will make page turns noisier for the user and may result in added wear or even damage to the pages over time. Therefore this option, while it is not altogether ruled out, is not specifically recommended.

Library Binding Options

The list above includes bindings normally used by publishers. The options available to libraries involve very different vendors and procedures, on the whole more expensive than those used by publishers, but of a much higher quality. They are listed below.

Sewing and Recasing

Library binders are very much accustomed to binding books in signatures and tend to prefer to make their own decision about how each book is to be bound. They generally have three options. If the sewing on the book is sound, *recasing* is usually most appropriate. This involves removing the old cover and its endpaper(s), then attaching new endpapers and cloth hinges (usually as a unit) to the *book block* by some combination of sewing and glue. A book block is the block-shaped unit of attached pages, to which some sort of cover is normally attached. The new cover, normally made of sturdier materials than the cover originally supplied by the publisher, is then glued to the cloth hinges and outer endleaf. If the sewing of the signatures that comprise the book is broken or loose, then resewing the signatures will be necessary although this will cause extra strain on the spine. A third option that binders occasionally use is to cut off the signatures and adhesive bind the book. Do not let them do this to your music! Although adhesive binds are preferable to sewn bindings for single sheet scores, they are much less sturdy than sewn signatures. For any score that is expected to receive either frequent or long-term use, for example monumental editions and critical editions of standard repertory, consider such a misbinding as being tantamount to destruction of the score, and follow up accordingly with the binder.

On the other hand, do not let binders sew scores that consist of single sheets. The only sewing that is possible in this case involves stabbing through the sheets, creating an extremely sturdy bind that is highly resistant to opening, since it requires each page to have its own separate hinge along the edge of the sewing line. For many nonmusical texts this is acceptable and even desirable, but one cannot perform from music bound in this way since it often will not stay open. Acidic music presents an additional problem because the pages will eventually break along their individual hinges. Even if the pages have not yet begun to break at the spine, it is usually difficult or impossible to replace an oversewn binding since, by the time the sewing is cut off, the margin is too narrow for further sewing and the paper too old for adhesive binding.

Double-Fan Adhesive Binding

For scores consisting of single sheets, double-fan adhesive binding produces the best balance of durability and openability. To double-fan bind a book, one first clamps the text block (the entire book except for the cover to be applied) tightly together with the spine edge protruding about four inches above the clamp. One may then abrade or notch the spine edge to help it accept more glue, especially if the paper is coated. Next, push the whole block gently to one side so the that spine edge fans out slightly and apply a thin coat of glue to the spine, then immediately fan the spine in the other direction and apply a little more glue, so that each page is glued to its neighbor for a fraction of an inch along its entire spine edge. Library binders can do this job both rapidly and effectively with machinery. If high-quality glue is used, the paper is new, and the glue is not applied too thickly, such a binding can be expected to last a long time even with significant use. (An adhesive-bound *New Grove* dictionary will give way at “Bach” after about ten years, however, so make sure the library binder retains the signatures.) The most common reasons for the rapid failure of this type of binding are insufficient fanning (not enough of each spine edge is tipped with glue) and overly thick glue application (the thick glue layer resists bending when the book is opened and the pages break free). It is worthwhile opening each newly double-fan-bound book very flat sometime during the process of attaching labels and so forth, since the types of binding failure just described usually show themselves at once, and may occasionally happen with any machine binding, including those done by *Library Binding Institute* (LBI) members.

Pamphlet Binding

If there is a “classic” library binding for music, it is the pamphlet bind, since so much music is produced in single-signature pamphlets that need rigid covers to protect them from damage while in use and deformation while standing on shelves. There are a variety of methods available for attaching the rigid covers, including sewing (most recommended—sturdy and easily reversible), stapling (reversible and quick but less sturdy), and gluing (not reversible and therefore not recommended). All of these options, both as in-house and commercial procedures, will be considered in depth in chapter 3.

Parts

The twin challenges to libraries regarding parts are loss and heavy use, and there are a variety of options in response. Circulating parts as separate entities presumably cuts down on loss at least by making it quickly obvious that a part is missing, but this practice is sufficiently expensive as to outweigh its usefulness in large repertory collections. Most part losses will be noticed when the music is returned if music binders with pockets are clearly labeled with the number of parts, on the outside of the cover and/or by the bar code used by circulation staff to discharge materials. The various styles of pockets and part bindings available are covered in chapter 3.

Media Attachments

Media attachments were once a minor issue with regard to music scores, limited mostly to taped computer sounds to be used with exploratory scores and the occasional attached 45-rpm record. Even now, they are more commonly found with texts, periodicals, and pedagogical scores. With the rise of the CD format, however, sound examples are much easier both to produce and to use, making them a more attractive addition to material of all sorts. Many libraries separate all attached media materials from scores and books and circulate them separately, both to solve binding problems and to decrease the risk of media materials being stolen or simply left out by accident when the item is turned in. This policy works better for some materials and uses than for others, however, and some libraries do circulate at least some media with the books or scores they are intended to accompany.

CDs attached to scores present the same challenges as they do when attached to texts, since they normally come in little plastic envelopes glued flat to a cover where they strain the binding and rip free when someone tries to extract the CD. Some library binders have developed special CD-case covers, which are bound into the

cover and accommodated in the spine with stubbing like a part pocket, but include instead a sturdy polyethylene CD case. Other less expensive binding options include flat hinged pockets that can be added to commercial covers or pamphlet binders allowing a CD to be extracted without ripping the pocket off (directions for making these in-house are included in chapter 4), and commercially produced media cases that hold both score and CD, if the size of the score permits. Videos and cassettes can also be either circulated separately, placed with a score in a multimedia case (available in various types and size from library suppliers), fitted for a custom pamphlet binder, or included in a commercial library case binding. Any of these solutions may be the best one, depending on the circumstances of the library and the expected use of the score or book and its attachment. The binding decision usually depends more on circumstances of use and budget than on the format of the attachment.

Note

¹ Even though comb-bound music almost certainly falls under copyright protection, fair use guidelines permit a photocopy for binding purposes since there is no net gain in the number of copies and only the binding quality has changed. However this does require that the original be destroyed, not simply withdrawn. The small publishers and self-publishing composers who are most likely to produce scores that need this treatment are also likely to be the most vulnerable to copyright infringement in general, so it is best to be scrupulous in this matter.

Pamphlet Page Attachments and Bindings

One of the most important formats in which music is published is generally described as “sheet music”—a small collection of single sheets or folios in a paper cover. While the pages in this broad format group may be attached in a number of ways for publication, either stapled, taped, bound using metal spirals or plastic combs, or simply laid together unbound, library use imposes certain requirements that lead to greater uniformity of the bound product. Library music is normally expected to stand vertically on a shelf for long periods of time without curling over, to stand up to repeated heavy practice use with many page turns, to lie open easily on a music stand, and to retain all its parts. Parts may need to withstand being carried around in a backpack, separated from the score. It should also be possible to disbind and rebind library music without damaging it, since the bindings themselves may become wet, soiled, or damaged while successfully protecting the contents. Libraries generally meet these requirements by binding the sheet music into rigid pamphlet covers in-house, or by having the music bound commercially either as full case binds or in pamphlet binders, or by a combination of the two strategies.

Given a trained student staff at normal student wages, it is cost effective for academic libraries with significant music collections to bind music in-house. For libraries with smaller music collections or without student or entry-level staff, however, the commercial option is worth considering, particularly if offered by the binder already under contract with the library. Pamphlet binder costs are in the two-to-four-dollar range, while commercial pamphlet binds are in the four-to-six-dollar range, seven to nine dollars for a full case binding.¹ Binding a single pamphlet in-house, not including pockets, takes one to ten minutes, depending on the type of binding chosen and the proficiency of the person doing the binding. Even if commercial binding is chosen as the best binding strategy for all music, it will be worthwhile to read about the page attachments and binding styles in this chapter and the next, since commercial pamphlet binds may use similar processes. Particular questions for commercial binders are included at the end of this chapter.

Folio Creation

The ideal piece of sheet music for library binding purposes will consist of one or more folios laid together without any sort of fastening. Music is not published for libraries, however, and even the most conveniently made pamphlets will generally be stapled together, so staple removal is a standard part of any library bind. Even though new staples may promptly be added (depending on the library’s choice of binding style), it is important not to leave the commercial staples in place since they are liable to rust. There are often more involved issues related to page attachment, including unattached single central pages, single page parts, and multipage items with various attachment types, such as tape, staples, combs, or spirals, that will not hold up to library use. The best strategy is to form a sewable signature by some means and then pamphlet bind it. There are three methods of doing this, one of which can be applied to most situations. First, one may crease the inner margin of a single page and sew through that fold. One may guard, or hinge, pages together or to other surrounding pages using tape or glue. Lastly, in the case of scores with badly damaged margins, one may photocopy pages onto new paper and use the opportunity to create folios or wide margins to crease and sew through. These options and their applications are described in turn below.

Creating a Marginal Crease

This solution is conceptually elegant and physically durable, but requires an inner margin wide enough to afford a $\frac{1}{2}$ " fold, so it can normally be applied only to sheet music with unusually wide margins or preservation photocopies on large paper. However, preservation photocopying should be considered as an option for original binding of short, cheaply produced scores whose comb or spiral bindings leave less than $\frac{1}{4}$ " of inner margin to work with. Such a narrow margin can be considered to be a preservation issue that cannot be resolved by ordering a new copy, so the library preservation exception to copyright can apply; if the original is destroyed the conditions of fair use are met as well. For music consisting of five sheets or fewer, this will probably be the most cost-effective solution, as well as the most durable. Full directions for photocopying damaged music are given in chapter 7. The bindery and cataloging departments of the library may need to make a policy agreement regarding whether such photocopy replacement for original binding is to be reflected in the cataloging of an item—that is, whether or not the photocopy is to be considered copy two, copy one being discarded.

Materials required:

- sheets to be sewn (this process is strongly recommended for up to five sheets, but can be used for larger pamphlets as well, up to about ten sheets)
- *paper cutter* with clamp (or cutting mat and large, heavy straightedge, *x-acto knife*)
- *bone folder*

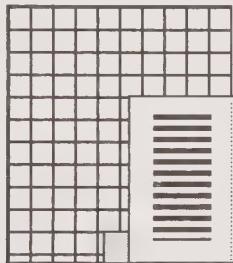
1. Set the pages to be sewn in score order. Divide the score in half; if there is an odd number of pages, include the extra page with the first half of the score.
2. Begin with the second half of the score, turned face down with the last page on top, so the music is right side up, spine edge on the right. Placing the pages this way will end with them creased toward the center of the score.

If you are working with commercially produced sheets, you probably do not need to cut the margin at the spine, and may proceed to step 8.

3. If you have a paper cutter with a clamp, set the top (last) page into the cutter *without lowering the blade*. Make sure the spine edge of the page is along the cutting blade. If you are working with a cutting mat and straight edge, align the page (either side up) along a horizontal line of the mat, with the straightedge set vertically along the spine edge.
4. If you are working with a photocopied reproduction, the shadow of the spine fold will probably show clearly. Move the page so that the spine fold is along the straightedge or blade edge of the cutter (but do not cut yet!). Shift the page if necessary so that the outer edge of the paper lines up with a measure mark on the mat or the cutter ruler that is easy to find. Now move the page away from the cutting edge (or the straightedge toward the spine edge of the paper) another $\frac{1}{2}$ ", providing $\frac{1}{2}$ " extra margin along the soon-to-be creased fold of the page. If no spine fold is visible, set the paper so that there is a $1\frac{1}{2}$ " margin between the edge of the printed music and the edge of the paper cutter or straightedge. Now you may cut the page!
5. Note the point on the cutter ruler at which the outer edge of the page is now set, or (preferably) mark the place on the metal bed of the cutter with a Post-it or piece of tape, so that you can set the outer

edge of each page in that same spot each time quickly and easily. Post-its can also be useful with a straightedge and mat.

6. Cut all the pages to the same size. It may be possible to cut more than one page at a time in some cutters, but this is not recommended since cutters tend not to cut multiple sheets evenly (either in size or with a clean edge). Be sure either to lay the pages face up as you cut them or to reorder the completed pile in score order when done.
7. Cut the pages of the front half of the score to the same width as well but keep the piles separate. Note the difference in orientation between the front half of the score—first page on top, face up but upside down—and the back half (last page on top, right side up) when you are cutting them with the paper cutter (this may not be the case with a mat and knife). In any case, make certain that you are cutting the spine edge of each sheet.
8. Set the top page of the back half of the score into the cutter, *again without lowering the blade*. This time, mark the position of the outer edge of the page when the spine edge is at the cutting end of the paper cutter, with the $\frac{1}{2}$ " margin hanging over the edge.



If using a mat and straightedge, orient the pages so that the creases will lie as shown in the illustration to step 12 when the pages are arranged in score order with the edges creased upward by the bone folder; the exact orientation will vary depending on whether you are right- or left-handed. You may either use post-it to mark the page and straightedge positions on the mat or measure and lightly mark the $\frac{1}{2}$ " margin at the top or bottom of each page and then line up the straightedge at the mark on each page.

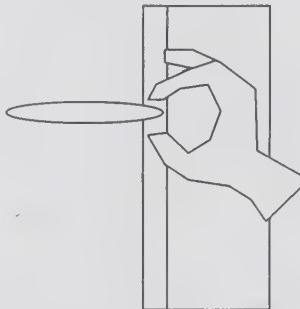
9. Crease the $\frac{1}{2}$ " margin down over the edge of the cutter using your fingers, or up along the straight-edge using a bone folder.
10. In groups of up to three pages, crease the rest of the back half of the score on the cutter. With the straightedge it is not recommended to try to work with more than one page at a time.
11. Crease the front half similarly, but make sure that the side showing is the front side upside down when you make your creases. This way the margin flaps will all be pointing toward the center of the score.
12. Set the two piles, now creased along the spine, with the front half of the score to the left of your work space and the back half to the right, as if the score were open, so that the creased edges are pointing up.



13. If there are an odd number of pages, pick up the center page, on top of the left-hand (front-half) pile. If there is an even number of pages, start with the top of the right-hand (back-half) pile.

14. Place the page in front of you and fold down the creased edge gently with your fingers. Use several light passes in long strokes, each folding down the edge a little more closely, so that the newly folded edge lies evenly and does not wrinkle or ripple. Flatten it down with a bone folder and set the page aside.

When flattening a narrow crease with a bone folder, it is best to burnish (rub gently) in short strokes with the edge of the bone folder held in one hand, while the thumb and forefinger of the other hand hold the crease in place on either side of the area being burnished, both hands traveling together up and down the spine along the crease. This helps prevent rippling along the creased edge. This technique is also important in making hollow backs for spine replacements.



15. Take the top page from the pile opposite the one you started with, gently fold it down with your fingers and flatten its creased edge with the bone folder, as before.
16. Place the previous page inside the one just finished, so that the two center pages of the booklet are in place. Flatten them again with the bone folder and set them aside.



17. Continue the process, each time taking the top page from the pile opposite the one you drew from last and placing the previously completed section inside the newly creased fold, until all the pages are in place, flattening the spine edge with the bone folder after each addition.

The last page to go in place should be the front page, if you have followed these directions correctly, so that the creased-over margin is at the back of the finished score.

18. You are now ready to sew or staple the score into a pamphlet (taking care to make the sewing holes through the inner page and its overlapped $\frac{1}{2}$ " edge). Sewing or stapling into an inner paper cover is recommended with this type of page attachment because it protects the outer $\frac{1}{2}$ " crease at the back of the pamphlet and makes it less noticeable to the user.

Guarding with Tape

This is the traditional method of guarding and is particularly useful for attaching single center pages to the surrounding folio and creating signatures from spiral and comb bound material. The type of tape chosen for

guarding is very important. The tape must be strong enough to sew through, but lighter than the paper on which the score is printed, otherwise the folios will not open as well and the pages are likely to break or tear along the edge of the guarding material over time. For this reason, cloth tapes are not recommended for guarding or reinforcing music scores at stress points, though it is permissible for reinforcing cover sheets. Some materials that work well include Filmoplast P90 or other paper document repair tapes, heat-set tissue made with paper or thin polyester, or lightweight paper strips glued in place with *PVA* or *wheat paste*.² Each of these has its weak points. The document repair tapes are relatively expensive and can be tricky to apply smoothly due to the backing. The heat-set tissue can be tedious to apply or fail to bond well if applied too quickly, and the motions of ironing can cause tendonitis or other repetitive motion injuries if used carelessly. Note also that some tissues stick better than others; it will be a good idea to get several samples and compare them in actual use. The paper and glue method can be messy. All of the options do work, however, and the most important factors in choosing among them are how they fit into current staff training and experience, and their individual strengths for particular projects. For guarding sheets with an inch or more of inner margin, the marginal creasing technique described above and “glue guarding” (p. 22) are recommended. Stapled bindings, which place more localized strain on the paper, are not recommended for materials guarded with repair tapes.

Materials required:

- the sheets to be guarded, spiral bind holes cut off unless they reach to within $\frac{1}{4}$ " of the text area (extra inner margin can be added in the guarding process if the tape is cut from wider strips or sheets in-house)
- small weights

one of the three options below:

- paper document-repair tape, 4" x 16" strip(s) of waxed paper or *silicon release paper*, or
- two sheets of silicon release paper cut to 4" x 16", iron-on repair strips cut to $\frac{1}{2}$ "-1" x length appropriate to the score)³ and a tacking iron with the thermostat set between “medium” and “high”,⁴ or
- strips of repair paper cut to $\frac{1}{2}$ "-1" x the exact height of the score (*grain* running long),⁵ several sheets of *scrap* paper cut to 4" x 16" (or more), glue and a *brush*. See below the variation on this technique in which the repair paper is cut to the correct width after one edge is glued to one of the sheets to be guarded.

1. Prepare your work area. For tape application, place a strip of silicon release material (or waxed paper for document repair tape with no heat involved) in the center of the work space, to go under the joint to be guarded. For glue application, have scrap paper strips handy.
2. Count the pages in the item to be guarded and divide them into two equal halves. If there is an odd number of leaves, take out the three central leaves and set them aside, keeping the rest of the item in two equal piles. The second half of the item should be in page number order, from the middle to the end; the first half should be in opposite page number order, from middle to beginning, as if the score were simply opened in the middle. For ease of working, set the piles side by side.
3. Set the top page from each pile on whatever protective material you may be using, laying them together at the spine edge. Leave a small—just visible—amount of space between the pages, unless you are deliberately adding extra margin at the spine using wider tape (for adding extra margin with paper and glue strips, see the variation below).
- It may be helpful to use small weights to hold the pages in place; with document repair tape or paper and glue, this is particularly important.
4. Apply the guarding material (see separate directions for each option, next page).

Document Repair Tape

- Tear off a length of tape a little longer than the height of the score.
- Remove the backing by loosening one end and then carefully pulling the backing from the tape, holding the tape relatively flat and pulling the backing away at an angle. If the tape is simply pulled free from the backing it will curl up into a little roll. The manufacturers recommend loosening one end and applying it to the repair and then pulling the backing free as you work, but this assumes that the edges being taped are inclined to hold still, which is not always true of pages to be guarded.
- Once the backing is off, hold the tape in place above the joint to be guarded and gently lower it into place, then smooth it with fingers and a bone folder. Make sure that all edges are firmly flattened.
- Pull the ends free of the waxed paper or silicon release strip and turn the new folio over.

Heat-Set Tissue

- Place a guarding strip over the area to be guarded, making sure that the shiny (glued) side is down.
- You may tack it into place if you wish by tapping it lightly with the iron at both ends. This is the major advantage of heat-set tissue—greater control of placement before it is glued down.
- Place the other piece of silicon release paper over the guarding strip to prevent the iron from sticking and so that any bits of burnt material that may be on the iron will not stick to the pages.
- Iron the strip into place. Depending on the type of tape and release paper, this will take several passes with the iron. A high enough heat setting should set the glue with two or three slow passes, but if plastic-based release film is used it may not be possible to set the iron hot enough without warping the plastic. In this case it may take as many as six to twelve faster passes to iron the material firmly into place. If slow passes are possible, they will be most efficient and produce the best results, but since such slow motion is ergonomically undesirable, the best compromise is to move the iron slowly but with a slight shaking motion, either up and down or side to side along the paper. This prevents wrist and arm muscles from becoming too tense while allowing maximum contact between the hot iron and the repair tissue.
- Pull the ends of the repair tissue free of the silicon release material and turn the new folio over.

Paper and Glue

- Set the repair strip on a piece of scrap material and use a small brush to apply a light coating of glue. Hold the repair strip down very firmly on the scrap at one end (if you allow the strip to shift you will get glue on the wrong side) and start applying the glue from that end, using long strokes. When you reach the other end, shift your grip on the strip to glue the end that is left. Too much glue will cause the paper to warp and shrink as it dries, too little may leave unglued patches.
 - Hold the gluey strip above the joint to be guarded and gently lower it into place, making sure that the ends are even at the top and bottom. Shift the strip slightly if needed at once, while the glue is still wet, then smooth it with fingers, and then a bone folder. Make sure that all edges are firmly flattened. If it is difficult to flatten the edges without abrading them, that is a sign that too much glue has been used, making the paper too wet.
 - Turn the new folio over and carefully flatten the inner edges of the pages at the joint. Set the folio aside to dry for at least half an hour before sewing. Guarding both sides of a sheet with glued strips is not recommended.
5. Guard the other side of the folio if necessary, using the same technique.

6. Trim any excess guarding material from the top and bottom edges and set the new folio aside. As you guard each pair of sheets and set them aside, they should form a signature in correct page order (missing the three central sheets if you had an odd number).

Adding Extra Margin with Paper and Glue

For scores with narrow margins, when it is difficult to hold the sheets in place, or in other circumstances where the alignment of the sheets presents problems, an optional solution is to cut the repair paper to the correct width after one edge is glued to one of the sheets to be guarded. For this variation, cut the repair paper to the correct height, but not into strips.

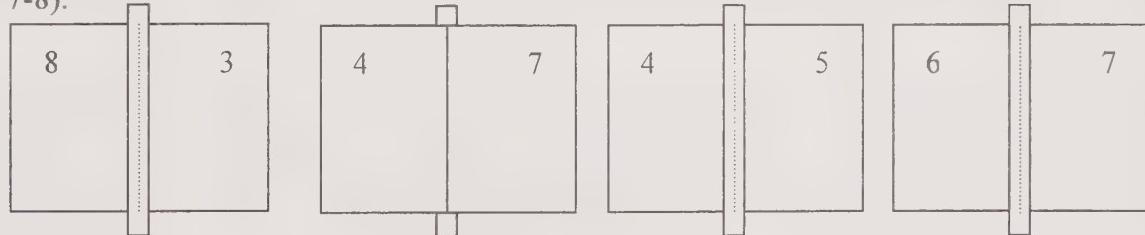
Glue one edge of the repair sheet to one sheet to be guarded. Use the directions for "Glue Guarding," next page, being sure to apply the glue to the edge of the score sheet, not the repair sheet. Set the other sheet to be guarded in place as desired, mark the outer edge of the repair paper at the point that gives the desired overlap and cut the repair sheet at that point, then glue guard the second sheet to the newly cut edge of the repair paper.

This variation is also recommended for guarding spiral or comb bound scores which have so little inner margin that it is impossible to cut off the holes. The glue is applied to the perforated edges of the sheets to be guarded, one at a time, resulting in less glue mess and less likelihood of the pages sticking together along the spine after they are bound.

Attaching a Single Central Sheet

Paper strips with glue are not recommended for this application, since they result in too heavy a lamination.

1. If you have three sheets left in the middle of a score, guard the back side of the two outer sheets first.
2. Turn them over and lay the middle sheet in place on one side or the other, in correct page number order, exactly over the sheet below. The figure below shows the central three leaves of a 10-page score (pages 3-4, 5-6, 7-8).



3. Guard the central sheet to the one opposite, then turn it over and guard it to the other sheet. The extended ends of one repair strip will thus be folded in the middle, before you trim them off.
4. Bind the finished signature.

Guarding a Single Central Sheet into a Folio

Some published pamphlets include one or more folios with a single sheet laid in the middle. This is attached as above, except for the method of aligning the central sheet. Instead of opening the folio out flat, the sheet should be placed inside and aligned with the folio shut. When the outer edges are all correctly aligned, lay the folio, still shut, on the work surface. While holding the central sheet in place with one hand, open the top sheet. Use weights to hold the central sheet in place while guarding the first side, then turn the page and guard the second side, as in step 3 above.

Glue Guarding

The third page attachment option is to overlap and glue the pages themselves down the center. It requires at least $\frac{3}{4}$ " of solid interior margin, but since computer programs are often set for 1" margins this will work for many inexpensively produced scores, unless they have been comb or spiral bound. Because the overlap will result in a narrow strip of doubled paper that will not fold well, the first step is to offset the overlap by cutting $\frac{1}{4}$ " from the spine edge of half of the pages. This method will only accommodate an even number of pages. If there is an odd number of pages, the front sheet can be cut separately from the rest with an extra $\frac{1}{2}$ " of margin along the spine. The rest of the score can then be guarded as usual, with the front page creased along the inner edge and wrapped around the signature. If the margins of the pages are too narrow to allow this, a blank sheet of similar size and color can be added to the back of the score, or the central sheet may be set aside and guarded with tape into the center of the innermost folio after it is formed.

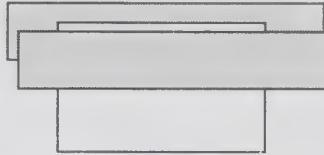
Materials required:

- the pages to be guarded
- glue, brush, and several sheets of scrap paper, each about 4" x 18"
- *straightedge*, bone folder
- paper cutter or long, heavy straightedge, mat, and knife

1. Open the score at the middle and divide the pages to be guarded into two piles, arranged like an opened book.
2. Trim $\frac{1}{4}$ " from the spine edge of the pile that represents the back half of the score, using a paper cutter or knife and cutting mat. Make sure when you are done that the pages are still in the right order.

For a longer score, it is possible to distribute the extra bulk of the overlap more evenly by trimming every other page from each pile (starting with the top page of one pile and the second page of the other!) and then reassembling them in order, but this added complication tends to invite trim or pagination errors and is not recommended.

3. Take the top sheet from the “front half” pile (it should be one of the two center pages) and lay it between two sheets of scrap paper with $\frac{1}{8}$ " of the spine edge showing, as shown below.



4. Apply a thin layer of glue to the exposed section, using a small glue brush and brushing vertically away from the edge of the cover scrap, stencil style.
5. Discard the scraps, or save them to use again. Some workers may be able to reuse a gluey scrap sheet edge many times without undue mess in the bound product; others may not.
6. Turn the glue-edged sheet right way up, as if it were correctly placed in a book. Align the bottom edge of the sheet along the raised bottom guide of the paper cutter, a straightedge, or a line drawn for this purpose on the scrap sheet lining the work surface.

7. Take the top sheet from the “back half” pile, *making sure that it is indeed the correct other page for the center signature and is correctly aligned*. Once you glue them, it is too late to fix easily.⁶
8. Using the straightedge or the raised edge of the cutter as a guide, set the second sheet in place, overlapping the glue-edged sheet by $\frac{1}{8}$ " (use the edge of the glued area as a guide). Make sure that the bottoms of the sheets are both lined up straight along the bottom of the cutter or straightedge, even if this means that the overlap is not perfectly square.
9. Burnish the new glue joint on both sides with a bone folder and set the double sheet aside to dry while you glue the rest of the double sheets in the same way.
10. Once all of the sheets are glued, fold them one at a time into folios, flattening each one with the bone folder.
11. Bind the new signature like a normal pamphlet. This type of guarding will work with a stapled binding.

Single Page Parts

Parts that consist of a single sheet are at particular risk for excessive wear if they are left uncovered, especially if they are printed on both sides. Therefore, cover sheets are recommended for single-sheet parts. If there is sufficient margin to create a $\frac{1}{2}$ " crease to sew through, that will be the simplest solution. Otherwise, glue guard a strip of paper to the spine edge of the music sheet and create a crease to sew or staple through. The strip may be as narrow or as wide as you prefer, between 1" and the entire width of the sheet of music (making a folio). It is also possible to tape guard a strip of paper to the music and sew through the tape hinge, but this involves more work for a less sturdy result. Scores that include many single page parts, each printed on one side, may present a dilemma in that the amount of work involved in binding them may not be justified by the use they will get. If it appears likely that the parts will be handed out at the beginning of a rehearsal or performance and collected at the end, placing all the parts in a pocket unbound may be considered as a solution.

Unusual Paginations

When considering page attachments, it is important to be constantly on the watch for unusual paginations, which occasionally occur to solve page-turn problems for the performers and are thus very important for performance. These paginations are most common in parts, and, if you normally place parts in pockets without covers, some of the difficulties will be removed. Even if you normally cover parts, you may wish to consider leaving these unusual parts uncovered, unless heavy use is expected.

1-2, 3-4 Paginations

Sometimes music folios are ordered with the first two pages of music on one side of the fully opened sheet and one or two further pages on the second side. If a folio paginated in this manner is bound into a cover by sewing through the fold, it will be necessary for the performer to turn the pages back and forth several times in order to perform the music. Because the reason for this type of pagination is usually poor page turns after pages 1 and 3, the problem is considerably exacerbated, to the point where music sewn through the fold may be impossible to use without performer alterations such as photocopied pages taped to the library copy. These problems, and the resultant abuse, can be averted either by leaving the part uncovered or by glue guarding a 2" strip of paper along the outer edge of the first page (it may appear as p. 2; folios in this page

format are sometimes numbered 2-5), creasing the added paper $\frac{1}{2}$ " from the edge of the music sheet, and sewing through that fold instead of the central fold of the folio. If tape guarding is used (creating the crease right along the inner edge of the music sheet), it will be necessary to trim the opposite edge of the sheet in order for it to be opened and refolded easily without damaging the outer edge.

Single Sheet Paginations and Accordion Folds

Three solutions may be used for parts that are published in single, one-sided pages due to difficult page turns. If there are only two to four such sheets, they may be guarded together and folded accordion style, then sewn through one of the folds or left uncovered. They can then be opened out across one or two stands for performance. Multimovement works can be separated into movements for this style of page attachment. If there are more than four such sheets, it may be necessary to place all of the sheets into the pocket unbound, with a notation on the front of the pamphlet cover concerning the number of unbound sheets for which to check. This poses the dual risks of damage and loss for each sheet, but the alternative is to have the library copy be unusable for performance except with a page turner, which may be unacceptable to patrons in some music libraries. Fortunately, this circumstance is rare.

Downloaded Music

With the proliferation of desktop music publishing, many scores now reach libraries in single pages simply because that was how they were printed out by the composer/publisher, or because they were distributed by computer download rather than being purchased in paper form. It is, therefore, always worthwhile to look closely at such scores to see if they would, in fact, support reasonable page turns if copied onto two-sided paper and guarded into a normal pamphlet. Music that is down-loaded onto $8\frac{1}{2}$ " x 11" paper can also be copied (with some care regarding signature formation!) onto 11" x 17" paper and folded into signatures with no guarding needed. Note, however, that the grain of most 11" x 17" paper runs with the length of the paper, which means that the sheets will be folded against the grain. This is never recommended in binding because it is liable to cause cockling and added difficulty in turning the pages. If this option is to be used regularly, it will be worthwhile to contact a paper supplier about obtaining 11" x 17" paper with "the grain running short," even if that means paying to have paper specially cut. As downloading music becomes more prevalent, it should become easier to obtain paper with the correct grain direction—probably followed by printers and software programs able to print 11" x 17" double-sided signatures.

Pamphlet Binds

Once you have a gathering of folios (or sheets creased along the spine) with no loose sheets, you are ready to bind the music. Pamphlet binder manufacturers have developed several variations on a fairly simple theme: a rigid *board* cover with cloth hinges and optional pockets. This design allows the sheet music to be sewn, stapled, or glued into the binder through the central fold, with any parts placed in attached pockets. Descriptions of a selection of pamphlet binder products are found in the next chapter. Manufacturers also offer pamphlet-style binders for items with more than one signature, where the signatures can be glued or stapled separately into a widened cloth hinge/back. This binder type can be considered for sewing scores of up to five thin signatures but is not recommended for binding circulating music using glue alone or staples because the cover is likely to pull loose or tear under heavy use. Multiple-signature scores that will receive significant use will be better served by case binding by a library binder.

Binding with Staples

This procedure is the simplest that meets all of the basic library requirements for pamphlets (openability, sturdiness, rebindability). It will be vulnerable to having the folios pull or tear out, however, either singly or the entire score. This is more likely to happen with heavier items, and for scores over thirty-two pages (eight folios), a sewn binding is strongly recommended. It takes one to three minutes to bind a simple pamphlet with up to two parts by this method, assuming that the parts are also stapled folios and are placed in a commercially provided pocket. An Archival Products spine-wrap binder was chosen for the directions in this example, but it is not necessary to use that particular product since the smooth backs of the staples will be on the outside of the binder.

Materials required:

- score to be bound and binder to fit
- *binding knife*
- *saddle stapler*, steel staples

1. Using the binding knife, remove any staples from the music (including all parts) by prying the ends up and then prying the staple out from the back. A blade type staple remover can also be used, but the claw type may damage the spine in the process of removing the staples.
2. Lay the opened score in the binder, positioned as desired. Note that binding the pages *flush* with the bottom of the binder is not a good idea for scores, since the likelihood of the pamphlet's weight dragging it out of the binding is much less than that of the bottom edge becoming tattered with use.

If the binder to be used has a strip of tape with water-activated adhesive sewn down the middle, this strip must be removed by cutting the threads attaching it to the spine strip. The reason for this step is discussed below.

3. Place the score and binder music-side down on the saddle stapler with the stapling head centered in the middle of the spine.
4. Pull the spine-wrap cloth out of the way, so that it does not get stapled through.
5. Make sure that the music is still positioned as desired, and that the spines of the music and the binder are lined up over the saddle of the stapler.
6. Make the first central staple through the spines of the music and the binder.
7. Remove the book from the stapler and check that the lineup was correct and that the music opens easily. (This step may be skipped with practice.)
8. Replace the music and binder over the saddle and add staples about 1" in from each end of the spine of the score—*not of the binder*, which may be significantly larger than the score.
9. Add two additional staples centered between the middle and end staples. The space between staples should not exceed about 3" for library music use.
10. Close the binder over the music. With the binder closed, remove the liner from the spine wrap and seal it around the spine, over the staples.

11. If there are parts, remove any commercial staples and replace them with steel staples using the saddle stamper. The parts may then be placed in a pocket provided in the binder.

Variations on Staple Bindings

It is not necessary to use spine-wrap binders for stapled bindings. One can use any binder with a cloth hinge with a single central fold, or even a binder with a glue strip, as long as the adhesive strip is cut free of the binder so as not to stick to the score accidentally over time. In many binders with glue strips, the lower of the two center-sewn strips, the one glued down to the binder, also serves as the inner-hinge cover. For these it is important to remove the upper strip carefully, cutting through the sewing threads to leave the lower strip glued to the binder.

The staples are applied with the ends showing on the inside so that the binding can be removed more easily when necessary and so that the outside spine is safe to touch even if the spine wrap is not used. If the spine-wrap binder is used, the staples could be applied with the ends clamped on the outside of the binder, under the wrap. This would help to hold the music more securely in the binder but will also make it almost certain that the music will be damaged if it is pulled free, whether by vandalism, accident, or in the process of rebinding.

Parts may be stapled into the reinforced cover sheets described in the sewing method below, or into heavier stock covers. This will give them added protection while in use, both from wear and from notes about rehearsals times, etc., but will also add some bulk, making it more difficult to use commercially provided pockets. Cover sheets are strongly recommended for parts in heavily used ensemble scores, since they will probably be carried separately by the performers.

One other “variation” worth mentioning here, depending on the library’s mission and the expected use of the music, is to remove commercial staples, if any, and place score and parts in a binder pocket or portfolio binder, otherwise unbound. This option is, of course, recommended for rare music that will not circulate, since it involves the least imposition on the original condition of the score, but it can also be a quick-process option for low-use circulating music. The obvious vulnerability is to theft or accidental loss, but a determined thief can easily cut any pamphlet-bound score from its cover to the same effect. An exterior label warning circulation personnel to check inside the binder for the specified contents would be especially important in this case, though it is useful for any pocket binder. Because the other major vulnerability is damage to uncovered parts, this binding style would not be recommended for repertory that would circulate frequently.

Sewn Binding with Cover Sheet Glued into Pamphlet

The pamphlet bind described below is a more time-intensive binding method that involves sewing the score into a cover sheet and then gluing the cover sheet into a commercial binder. However, it is extremely durable. The spine-reinforced cover sheets both protect the music and support the sewing, and also allow the item to be glued into a center-strip binder, which also helps to support and protect the sewing. From a sample covering eighteen years’ use of this type of binding, items returned for rebinding have been the results of worn hinge cloth or music paper, or abuse. Even very bulky pamphlets can be bound successfully by this means, though special binders and pockets may need to be constructed. Although a separate cover is supplied, removing pamphlet covers (sometimes done to reduce bulk, if they contain no unique information) is not normally recommended. Without the added protection, the double layer of tape applied to the cover sheet during the binding process might create an unwanted extra crease along the spine in the outer pages of the score when it is opened. A standard pamphlet requires about ten minutes to process using this method, with an additional three to five minutes for each part.

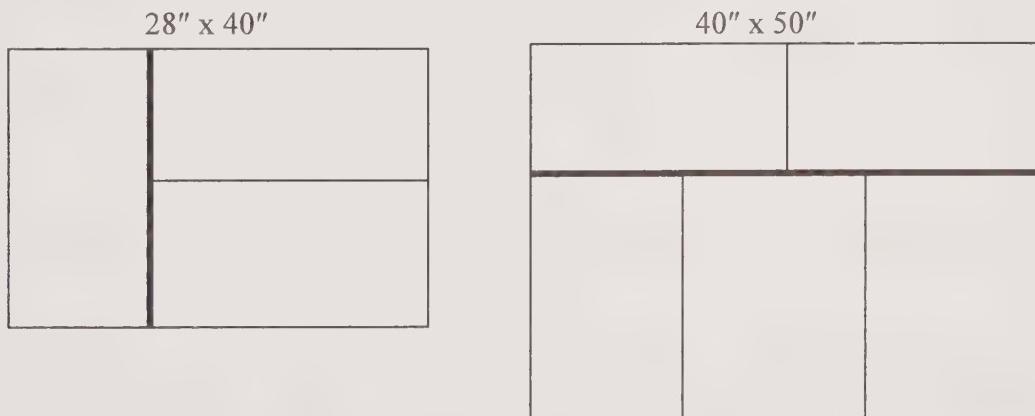
Materials and equipment:

- the score to be bound
- 18" ruler
- pencil, scrap pad
- large sheet of lightweight acid-free paper
- large paper cutter, or x-acto knife, straightedge, and cutting mat
- bone folder, scissors, *water*, small and large brushes, large sheet of scrap paper
- $\frac{3}{4}$ " perforated cloth tape, or Tyvek tape
- sewing board (optional)
- binder's knife, three binding *awls*, *needle*, and binding thread
- pamphlet binder appropriate to the size of the score

Cut Cover Sheet

1. Carefully measure the exact height of the item, to the nearest $\frac{1}{16}$ " of an inch, and note it on the scrap pad. Careful measurement now will save a trimming step later. For taking exact measurements, be especially careful regarding three potential pitfalls: make sure the 0 mark on the ruler is at the very edge of the paper, that the ruler is parallel to the edge being measured, and that you are looking directly down at the measure mark, not from an angle, when reading the measurement.
2. Measure the width of the item, to the nearest $\frac{1}{8}$ ". Double the amount, add $\frac{1}{2}$ " and note the result on the scrap pad. This measurement should be about $\frac{1}{2}$ " more than the full width of the item spread out flat. The extra $\frac{1}{2}$ " allows for the fact that the outer paper cover will wrap around the outside of the item. The excess must be trimmed away later for an exact fit.
3. Cut a sheet of lightweight acid-free paper to the dimensions you have noted.

Observing paper grain in cutting these light cover sheets would almost double paper consumption, while offering little value, given the light weight and expendable purpose of the cover sheets. Therefore, suggested cutting schemes for optimum paper conservation are shown below for two standard paper sizes. The thicker line is the first cut to be made.



When cutting from a 34" roll, it is possible to use the scheme shown for the 28" x 40 " sheet to cut covers for smaller, 9" x 12" scores. For larger covers one may either cut the covers one by one to height (i.e. cutting off 13" or 14" at a time and then cutting those sheets to the desired width), thus keeping correct grain direction with an average 37% waste, or cut the covers two at a time cross grain with an average 21% waste. This will

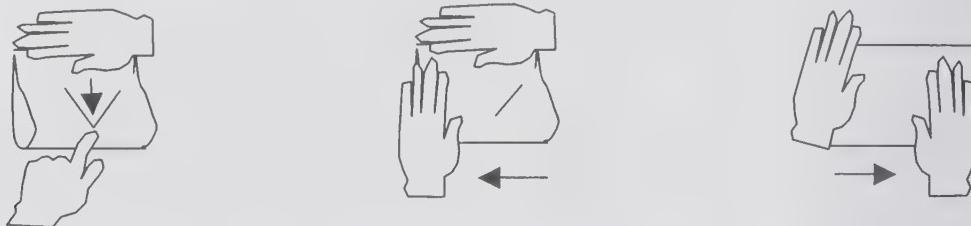
still be cheaper than ordering sheets smaller than 28" x 40". This is the only exception to the normal rule of keeping grain parallel to the spine—and the resultant slight warp and curl to the paper covers clearly shows the reason for the rule.

Measure and cut covers for any parts, using the same techniques. Parts are often slightly different in size from the associated score, so it is best to measure them separately. For scores that will receive heavy use, you may wish to use heavier paper to cover the parts, since they may be separated from the protection of the cover while in circulation.

Reinforce Cover Sheet

The directions below are for the use of the $\frac{3}{4}$ " cloth tape traditionally used for reinforcing hinges. However, this tape is notoriously stiff when laminated to paper, which is why it is never recommended for guarding the music itself. Even when applied only to the outer cover sheets, it can have the undesired effect, especially with music printed on thin paper, of creating an extra hinge along the edge of the stiff tape, right through the cover sheet and into the outer pages of music. One option to consider is using Tyvek tape, whose price has now come into the same range as cloth tape. In this case, the step of moistening the tape will be avoided, since the glue on the Tyvek tape is pressure sensitive, but extra care will be needed in folding the tape over the fold of the hinge. A ruler and bone folder are recommended, at least at first.

4. Fold the newly cut cover sheet in half. Match the short edges at the top of the workspace first, then hold them flat together with one hand while sliding one finger of the other hand down the center of the page to mark the center of the fold. Still holding the top edges firmly in place, slide one hand along the bottom to crease the fold outward from the center, first in one direction and then the other. This is the quickest and most reliable way to fold a sheet neatly and precisely in half and will be especially important in folding cross grain sheets, since they will tend to skew to one side.



5. Cut a piece of cloth or Tyvek tape $\frac{3}{4}$ "-1" wide and slightly longer than the folded edge of the paper cover you have just made.

If the tape is curled, flatten it by pulling it over the edge of the work table against the curl.



If you are using Tyvek tape, be sure to remove the backing by loosening one end and then carefully pulling the backing from the tape, holding the tape relatively flat and pulling the backing away at an angle. If the tape is simply pulled free from the backing it will curl up into a little roll. Skip to step 7.

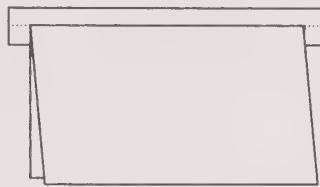
Lay the tape flat on the worktable, on a sheet of scrap paper.⁷

6. Dip a small glue brush in water and shake the brush twice, sharply, over a waste bin. This leaves about the right amount of water to activate the glue on the perforated tape.

Brush the water all the way along the shiny (glued) side of the tape with long, even strokes, making sure that the whole tape is evenly wet, particularly the outside edges all along the tape. After six or seven strokes the tape should feel tacky, and your fingers will probably stick to the tape at the end you are holding.

It is important to follow all of the directions for this step precisely. If you have too much water in the brush, or brush for too long, there is a risk of washing the glue off; if not enough, the tape may not remain tacky long enough to stick. If you use short brush strokes you risk leaving drier spots that will not adhere.

7. With the wet tape still flat, carefully position the folded edge of the paper cover along the perforated line in the center of the tape. Do not let the paper actually touch the tape until it is centered, since as soon as it touches, it will stick.



It may take a few tries to get the hang of this technique. If the tape will not lie flat, hold the ends down with both little fingers while stretching the paper above it between thumbs and forefingers.

8. When the folded edge is laid down along the center of the tape, fold the upper half of the tape gently down over the paper, using two or three light strokes outward from the center on either side, each taking the tape down partway, rather than trying to fold it down flat in one motion. This prevents the tape edge from folding (and sticking) unevenly and is an important technique. Flatten it thoroughly with a bone folder, making sure that the edges of the tape are stuck down all the way along. Sealing the outer edges of the tape is more important than flattening the crease.
9. Trim off the ends with scissors, or a knife, ruler, and cutting board. Note that it is not easy to trim them perfectly straight with scissors, but this is not as important as other details, nor is it imperative to succeed in aligning the fold of the cover perfectly along the exact center of the perforated tape—all evidence of imperfection will disappear with the cutoff ends. The detail that is important is that the edges of the tape be completely sealed, especially on parts, where it will be exposed. If there are small unsealed ripples, brush in a little extra water and flatten them again; see step 32 below.
10. Tape the spines of any part covers in the same way. Other than not being glued into binders, and, perhaps, being covered with sturdier paper stock, parts are treated in exactly the same way as scores.

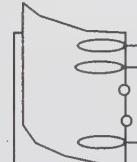
Sew Item into Cover Sheet

11. Using the binding knife, remove any staples from the music (including all parts) by prying the ends up and then prying the staple out from the back. A blade type staple remover can also be used, but the claw type may damage the spine in the process of removing the staples.
12. Place the score in its cover sheet. If there are parts, place them in their sheets as well.

13. Place the score in its paper cover on a sewing board, with the spine flush with one edge of the board. This allows the awls and needle to be inserted at a slight downward angle and makes sewing easier. Some people prefer not to use sewing boards, since they often feel awkward at first, but the board does make sewing easier and faster with practice.
14. Open the score to the center, then tap score and cover together so that the top and bottom edges are even. If the height was mismeasured and the cover is slightly large, tap the bottom flush and trim the top later; if the cover is slightly short, even out the difference between top and bottom. If the cover is very short due to mis-measurement, cut a new one and save the short one for a smaller item.
15. Working from the inside, pierce the score and cover with one of the awls, about 1" from one edge. Leave the awl in place.

Place another awl about 1" from the other edge.

16. Using the third awl, make three holes at evenly spaced intervals between the first two awls by piercing the center hole first, then two more midway between the center and the end holes. Leave the third awl in the last hole made.



17. Cut a piece of *binding thread* about five times the distance between the outer awls. This will be enough to sew the spine with a doubled thread, plus enough extra for the knot.

If there are parts, cut threads for them at the same time, all to the same length (assuming they are approximately the same size).

18. Thread a needle, pulling the ends even so the thread is doubled.

Do not wax the thread! It will make your knot slip! Waxing thread is important in book binding, but not for pamphlet binding, which is structurally very different.

19. Holding the needle in your good hand (i.e., the right hand if you are right-handed), sew through the center hole from the inside of the score.

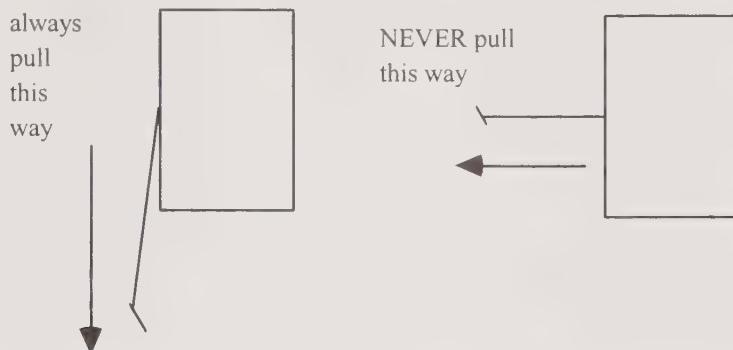
“Catch” the needle from the outside with your other hand without pulling the thread through very far (to save time by avoiding unnecessary motion) and sew back through whichever hole does not have an awl in it.

Catch the needle with your good hand from inside the score, remove the awl at the end hole, and sew through that hole. (See illustration.) Keep your good hand inside the score and avoid opening and shutting it while sewing. This will become easier with practice.



20. Pull the thread through until there is about 3" showing in the center of the book.

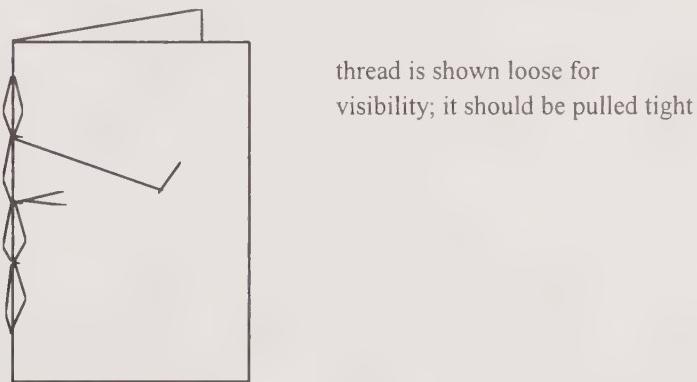
Always pull thread in the direction of the spine of the book. This extremely important sewing rule prevents thread from ripping through the back of the signature.



21. Sew back through the same holes, being very careful not to pierce a thread with the needle while doing so.

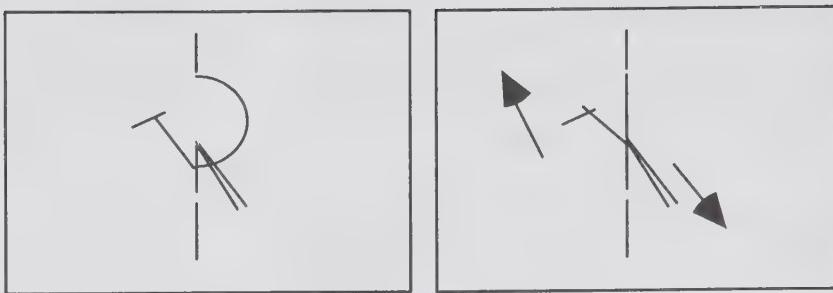
If you pierce a thread with the needle you will not be able to tighten it, so care is important. It is fairly easy to pull the tail thread out of the way on the center hole; it may help to loosen the thread when sewing through the other interior holes, so that it is possible to hold it out of the way there also.

22. Pull on the tail from the inside of the score with one hand and on the needle thread from the outside with the other hand at the center hole, until the sewing on the bottom is tight but the paper is not wrinkling (which may happen if a slim score of a sheet or two is pulled too tight).
23. Remove the last two awls from the other end of the score and sew this half the same way, but do not sew back through the center hole at the end of the process. Pull the thread tight along the whole spine of the score, checking both outside and inside for tightness.



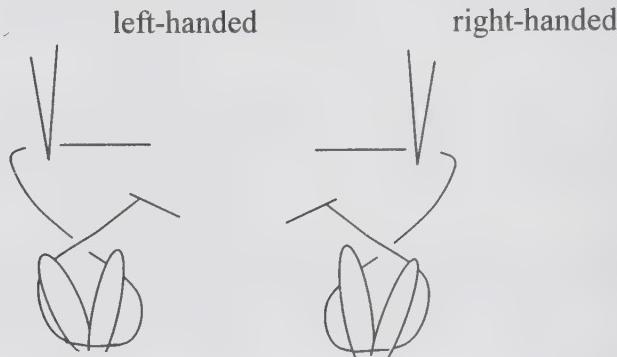
Some tricks for tightening the thread are to pull the two strands separately and to pull sections one at a time, working out from the center in both directions along the path of the thread. If a section is still loose after these two steps, it is probably because a thread got pierced with the needle during sewing. In that case, pull the sewing out to that point and redo it.

24. With the score open, slide the needle under the stitch on the far side of the center hole. This will make it possible to pull the tail end and the needle end tight against each other in opposite directions.



25. Use the following bookbinding knot:

Loop the thread on the needle around two fingers of your “good” hand, with the loop around your fingers opposite in direction to the loop around the tail thread, like either of the figures below. (The needle thread is also doubled, but is shown single for clarity.) You may need to turn the score around or slip the needle free again and repeat step 24 from the other side to arrange your work to look exactly like either illustration.



Use the two lassoed fingers to catch the tail threads and draw them through the loop, pulling tight. Now release the tail ends and pull the needle end taut. It may feel at first as if this is loosening the tail end, but the actual effect should be to have both ends of the thread “participate” in the knot, rather than simply hitching the needle thread around the tail thread, which is then left relatively free to slide. Now tighten both thread ends at once.



Follow up the bookbinder’s knot with a simple knot; using a second bookbinding knot is more likely to result in a double hitch than using a different technique. Note that even square knots can slip, by turning themselves into double clove hitches of one thread around the other, unless care is taken to tighten both threads while tying the knots. The bookbinder and simple knot combination described above has proven less liable to slip than other knot combinations and is therefore recommended, but even it is not foolproof. Until you are certain of your technique, check that the knot will not slip by pulling at the stitches on either side of it from the outside of the score. They will always be a little loose (since you will overtighten the other stitches) but should not pull free.

26. Cut the threads to about $\frac{3}{4}$ ". Remove the extra thread from the needle and immediately put the needle back where it belongs—it is very easy to lose needles on a worktable!

27. Sew any parts in the same way.
28. Trim the excess from the outer edges of the cover sheet. Any overlap (even as little as $\frac{1}{16}$ "") that is allowed to remain tends to become tattered and unsightly very quickly.

These edges may be trimmed either on a paper cutter or with a knife, straightedge, and cutting mat. Either way, it will work best to cut the outer edges separately, using one or two sheets of the music (or its cover) as a guide along which to place the straight edge or cutter clamp. The top edge can be trimmed, if necessary, with the score opened out flat. If the score is very thin you may save a few seconds by cutting both layers of the cover sheet at once with the score closed. This method invites cutting errors, however, and will lead to a ragged edge if the score consists of more than two folios.

Glue Item into Binder

29. Choose a binder of the correct size. There should be at least $\frac{1}{4}$ " margin around the music on all sides, but pocket binders may need to be 1" or more wider than the score (and proportionately taller) in order to accommodate the parts without strain.
30. Dip a large glue brush in water and shake it three or four times over a wastebasket. Too much water or brushing may wash the glue off; not enough may fail to activate it fully. Brush the center tape of the binder to activate the glue. Use long strokes the entire length of the tape and make sure that the tape is wet to both edges. Using the large brush helps with this, but it is also important to brush first one side and then the other, not trying to get the whole tape wet by brushing down the middle. Keep brushing until the tape feels tacky as you brush, which will probably take five or six strokes along each side depending on the humidity in the workroom and the amount of water in the brush.
31. With the binder partly open, 90° or a little less, lay the spine of the sewn score along the center seam of the tacky tape, aiming to match the two sewn seams together. It may be tempting to open the binder fully flat to try to get a better match, but this does not, in fact, work as well. Having the binder only partly open helps to guide the score into a more natural and comfortable fit.

Set the bottom of the item flush with the bottom of the center tape in the binder (this is usually about $\frac{1}{8}$ " - $\frac{1}{4}$ " above the bottom of the binder). If the tape is flush with the bottom of the binder, give the music about $\frac{1}{4}$ " bottom margin, making sure to trim the excess tape at the bottom as well as the top of the score at step 33. If the binder has a pocket, make sure that the item is right side up with respect to the pocket!

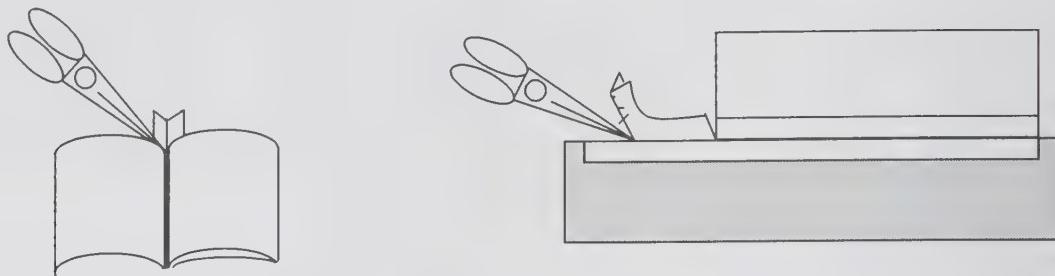
32. Close the binder over the item at once and press firmly back and forth along the spine of the closed binder with the heel of your hand for several seconds, about eight or ten very firm strokes on each side. It may be tempting to try to pull the tape into place and glue it down with the binder open, but the result will be less well centered than if the binder is shut.

Reopen the binder and use a bone folder to flatten the edges of the center tape firmly against the cover of the item, checking carefully along any ripples for signs that the tape is failing to adhere. If a section of the tape cannot be flattened down with the bone folder, use a small glue brush, well shaken out, to brush more water under the edge of the tape. Use as little water for this as possible; adding water now is likely to make the paper cover cockle, even if it is cut with the grain running along the spine.

Note that the spines of thick scores may not be set all the way back in the cover but may instead be pushed out from the center seam of the binder tape by as much as $\frac{1}{8}$ ". This is not a problem. In fact, it is desirable and is the other reason not to glue the score into the binder with the binder fully open. If thick

scores are pushed all the way to the seam of the binder, the binder will not close as well and will be stressed at the center seam.

33. Trim the top end of the center tape on the binder flush with the top of the item, one side at a time, then cut through the threads holding the excess tape to the binder.



34. It may be necessary to wait for a minute or two for the tape to dry before trimming it.

35. Put the parts, if any, in the pocket.

Variations on Sewn Bindings

The most obvious variation on the binding above is to eliminate the cover sheet on the score. This saves three to four minutes per score and is easy to implement using the directions above, sewing the music directly into the binder. It does mean that the sewing must carry the strain of holding the score in the binder on the shelf, whereas with a cover sheet the strain is distributed between the sewn attachment of the score to the cover and the glued attachment of the cover to the binder. Without the support of the reinforcing tape, the likelihood of the sewing holes widening under the weight of the score is increased, particularly while in use or transit, but the difference is probably not significant unless the score is very heavy or heavily used. Note that a sewing board is especially helpful when sewing a score directly into a binder.

For parts, cover sheets are strongly recommended; indeed, the next important variation, already mentioned above, is to use heavier stock for the covers for parts. This will add bulk but also add greatly to the life of heavily used parts, or at least the life of the covers. If covers are not used, it is still not advisable to leave commercial staples in place, since they are liable to rust. Replacing them with rust-proof staples using a saddle stapler is preferable to sewing the parts without spine-reinforced covers, since the likelihood of the sewing thread tearing the spine is much greater without that reinforcement. This is not a problem for the score since the binder itself provides that support. Stapling uncovered parts is also preferable to reinforcing the outer sheets of the parts themselves with cloth tape, since, if they are acidic, the paper is likely to break along the edge of the reinforcing tape as it ages.

If a score is sewn into a glue-strip type binder without a cover sheet, it is important that the adhesive strip be removed, and not used. Leaving the strip in place will have the effect of using it once the score circulates in humid weather. No directions are given here for gluing scores directly into a glue strip, since this invites damage, particularly for acidic paper. Even if the score never needs to be rebound and no one ever wonders what is under that strip of tape, the outer folio will bend and break along the edge of the tape while the commercially stapled contents will pull or tear out. Instead, remove the glued strip by cutting through the threads that attach it to the hinge strip, as shown in step 33 above, and then sew or staple the score into the binder.

Another style of pamphlet sewing developed for text pamphlets involves using three holes rather than five. This is faster to sew, of course, but places much more strain on the paper at each hole and is much more likely to result in widened holes and a loose score. It is not recommended even for miniature scores, which tend to be thicker and heavier than many taller pamphlets. Many libraries also vary the sewing method by

placing the knot on the outside of the score rather than on the inside. Either method will work, and the ramifications for conservation are not great. However, since the greatest wear to the paper for a pamphlet score is along the outer spine, keeping the knot on the inside is slightly preferable and provides more protection for the vulnerable knot if the pamphlet is made with the sewing exposed. The natural inclination of the folios to spring open slightly along the central fold prevents the knot from wearing on the inside folio.

Sewing Multiple Signatures into Pamphlets

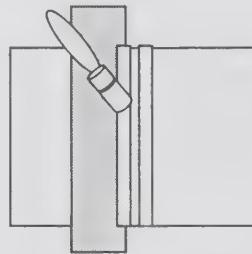
For libraries that have ongoing contracts with a binder, the best treatment for scores with multiple signatures is library binding. However, as not all libraries or branches have easy access to library binding, the following variation on pamphlet binding is given for sewing soft-cover scores with multiple signatures into pamphlet binders.⁸ Follow the directions for sewing a pamphlet into a cover sheet and then gluing it into a cover using the strip, with the following alterations:

- At step 2, add 1" instead of $\frac{1}{2}$ " to the width measurement for the cover sheet. If the spine of the score is more than $\frac{1}{2}$ " wide, add more—but also reconsider the difficulty of having the score library bound.
- At step 5, do not use the $\frac{3}{4}$ " tape. Instead, cut a piece of C-grade *buckram* (this is sometimes called cambric) or *Tyvek* to the height of the score and 3" wide, grain running with the spine for the cambric. *Tyvek* does not have a grain. Note that the F-grade buckram used for other procedures in this manual is too heavy for this purpose.
- At step 6, glue the cambric or *Tyvek* piece to the cover sheet, centering it by eye along the crease made in step 3. This is not altogether easy to do, since the cloth covers the crease, but perfect centering side to side is not important, as long as the top and bottom are even with the top and bottom edges of the cover. Be as sparing as possible with the glue, since using too much glue will cause the paper to swell into rippling lumps against the cloth. Using only a very thin layer of glue will prevent that effect.
- Skip steps 7-9, but prepare covers for any parts as needed. Do not fold the cover in half again. Instead, wrap it around the spine of the score to be sewn and use your fingers and/or a bone folder to define two creases, one along either edge of the spine of the score. Remove the score and flatten the two creases with the bone folder, so that the cover looks like the figure below (the dotted lines in the figure below show the edges of the cloth or *Tyvek* on the underside of the cover). For thinner scores this creasing step is not absolutely necessary, but it will make the sewing easier.



- Replace the score in the cover and sew as described in steps 11-24, but do not sew through the fold of every signature. For scores consisting of two or three signatures, sew through only one of the signatures (the center one of three) unless the total page count is more than seventy, in which case sew through two signatures (the outer ones if there are three). For scores of four to five signatures sew through the folds of the two outer signatures. If a score of five signatures has more than 150 pages, sew through the center signature as well. In every case, the sewing will be easier if you use a sewing board. For scores of more than five signatures use your best judgment regarding sewing, but a library binding is strongly recommended.

- At step 25, make sure that the binder chosen has a glue strip and enough hinge area to accommodate the score and still open easily. For scores more than $\frac{1}{4}$ " thick you will need to use a "shelf binder" that has a double line of stitching in the center glue strip, and from some manufacturers a piece of thin board supporting the spine (which is fine but not necessary).
- At step 26, do not use the water-activated glue, which is formulated to stick to paper but not to sized cloth. Instead use PVA glue, being careful to place scrap strips to protect the rest of the binder from getting glued.



- Follow steps 27-30 as usual, except that it will certainly be necessary at step 29 to wait for the glue to dry before trimming the excess tape above the top of the score.

Commercial Pamphlet Binding

As noted at the beginning of this chapter, commercial library binders that offer pamphlet binding may use a similar array of binding styles to that used by libraries in-house. They may, however, offer one other significant option not available for hand binding: a machine process called "saddle stitching," where the signature is sewn into the binder through the central fold in stitches resembling those of a sewing machine except much longer (about $\frac{1}{2}$ "). This is a very acceptable sewing method—the vulnerability introduced by the extra perforation of the score is less than the extra security against the sewing becoming loose. Given the choice, ask for saddle stitching, especially for thicker scores.

If the commercial pamphlet bind will be done by hand, make certain that five holes are used, not three. As noted above, this common practice for text pamphlets is not appropriate for music. It is unlikely that the commercial binder will use glue to attach the score to the pamphlet cover, but if they do so, then require them to use a paper cover sheet sewn over the music. Card stock covers for the parts will probably be offered, for a price. For high use ensemble music this will be worth the cost, but individual libraries may want to consider developing a contract that allows a choice of whether to use the covers, depending on the expected use of the score.

Case binding for pamphlets would be, in most cases, an unnecessary expense. In some situations, however, it may be justified: scores that will be very heavily used, or with parts that are extremely thick. The latter may be sewn into card stock or pamphlet covers and placed in a case pocket larger than a pamphlet can accommodate. If a case binding is used, make certain that saddle stitching is used and not the standard pamphlet hand-sew pattern, even with five holes. Because thicker scores tend to be candidates for case binding, the extra security of saddle stitching is necessary. Thick pamphlet-sewn items will loosen and fall out of hard covers just as readily as they will out of pamphlet covers. For other questions relating to commercial binding, refer to chapter 6.

Notes

1. These price ranges date from 2001 and relate only to single scores, not scores with parts.
2. Test a sample of Japanese paper before buying a large amount of the same variety for this purpose, because shrinkage of the long fibers can cause cockling of light scores with some repair papers. Strips of other high-quality light-weight paper will work as well, though they are less strong.
3. For most items, $\frac{3}{4}$ " is recommended for the width of guarding strips. However, if the margin is very narrow and the guarding material is opaque, $\frac{1}{2}$ " is a sufficient width as long as the material is applied carefully. If the tape itself is to provide extra margin, it can be cut to a width of 1" or even more.
4. Irons that have no thermostat may not get hot enough to bond some repair tapes reliably.
5. Some Japanese papers are formed without a current of running water and have no grain, but other papers will.
6. There are two options for repairing this mistake. One is recopying the pages involved. The other is cutting off the glued overlap, which will interfere with the crease, and guarding the incorrectly glued pages to their correct partners with paper or tape strips, allowing extra guarding material in the center to replace the portion cut off so that the repaired folios are the same width as their neighbors.
7. The entire workspace should always be protected with a large sheet of scrap paper, no matter what process is being carried out; this base sheet will suffice here.
8. This variation is intended only for scores where the sewing that connects the signatures is sturdy and sound. Scores where the signatures are separate or the sewing is loose cannot be sufficiently supported by a pamphlet binder and must be case bound.



Pamphlet Binders

Pamphlet binders can usually be made in-house more cheaply than they can be purchased, but the number needed is normally so large that in-house production becomes an overwhelming chore. Buying the binders ready made is usually the best solution. However, the series of instructions for custom binding below does begin with the method of making simple binders, which can be constructed to duplicate the features of any of the types commercially available. Those instructions may be useful for making oversize binders for folio scores even if binders in other sizes are purchased.

Commercial binders fall into four general groups, differentiated both by production style and by cost. Products of the three most important distributors, Archival Products, Gaylord, and University Products, are described below. The best known of Archival Products' binders, the spine-wrap version that is both distinctive and heavily marketed, is relatively expensive. Archival Products also makes cheaper style binders, however, and also offers clear polyester front covers at no extra charge on any binder they make, which further reduces costs for libraries that prefer that feature. The difference in their more expensive binders is a proprietary board that is denser than the now-standard *gray-white board* used by the other manufacturers.

Of the four types of commercial binders available, the cheapest (for music without parts) that meet library music requirements are the old, green *pressboard* styles still available from Gaylord and University Products. The board for this binder is nonacidic but does not meet current *ANSI* standards for storing archival materials. Twenty-year-old samples show no sign of chemical degradation, but heavy use will wear out both the board and the C-grade cloth hinges over a period of ten to fifteen years. The boards are noticeably less sturdy and rigid than the gray-white board used in more expensive archival binders but stand up adequately to light use. The recommended use for these binders would be for light- to moderate-use, easily replaceable scores. For materials that are heavily used or difficult to replace, binders made with sturdier board will be a worthwhile investment. The pressboard binders include a center glue strip. The pockets that can be ordered with these binders are more capacious than those that come with the gray-white board binders, due to the less rigid material, but the cost is high; pressboard pocket binders are more expensive than their archival board counterparts.

The next cheapest group is made from rigid 0.060 (pronounced "sixty point"—see *point* in the glossary for more information) gray-white board that does meet *ANSI* standards. This board is buffered on the white side, which is intended to be the inner side next to the material being stored. Archival Products' version is called the EZ pamphlet binder, Gaylord's is the Classic, and University Products' is the Dura-Board binder. They are all produced using center-sewn strips with water-activated glue on the inner strip, like the pressboard binders described above. As noted in the previous chapter, these strips should not be permitted to adhere to the music score itself. The tape is heavy enough both to strain the central fold of the outer sheet of the score to the breaking point and also to break the paper along the edge of the tape over time, especially if the paper is acidic. If an outer cover sheet is not used for binding scores, cut the adhesive strip free along the seam and discard it before sewing or stapling the score directly into the binder.

In the third category of binders, a strip of plain buckram replaces the center-sewn adhesive strip used in the cheaper binders. The Archival Products version, called Quick-Bind, is made with denser board, and is up to 40% more expensive than comparable binders offered by University Products (Perma-Gard) and Gaylord (LifeGuard). Keep in mind, however, that Archival Products offers the clear front version free of charge while the other companies charge extra for this option, which may reduce the actual difference in cost if your library

prefers clear front covers. Whether the higher-quality board justifies the higher expenditure will depend on the use the music will receive.

The most expensive binder style does away with both the center glue strip and the line of sewing or staples on the outside of the binder. Gaylord does this cheaply by including (free upon request) “sew-in strips” of unglued cambric. These are used by sewing or stapling the score to the cloth strip and then gluing the strip into the center of the binder using PVA glue. Archival Products’ version is more expensive but much easier to use: their Spine-Wrap binder comes with the outside cloth hinge glued in place on one side but gummed and covered with protective paper on the rest of its inner surface. After the score is sewn or stapled into the binder, the protective paper is removed and the cloth glued in place over the outside of the binder. As it also uses the high-density board, this version is exactly double the cost of their EZ binder, the cheapest of the center-glue-strip group in their catalog.

Simple Pamphlet Binder

Any of the binders described above can be duplicated in-house relatively easily, including the Archival Products binders (by buying their special board).

Materials required:

- *cover board* (pressboard, gray-white or high density) cut to approximate size
- F-grade buckram (C-grade is used on commercial binders, but is significantly less durable)
- $1\frac{1}{2}$ " *center-sewn tape*, if desired
- scissors, pencil, *board shear* or knife and mat, bone folder
- glue, small brush, scrap paper 6" x 18"
- *corner rounder*

1. Measure the score to be bound. Cut two cover boards $\frac{1}{2}$ " higher than the height of the score and $\frac{3}{8}$ " wider than the width. This will provide $\frac{1}{4}$ " margin all around.

Make sure that the grain of the board runs along the spine of the finished cover; the board in this case will bend a little more easily sideways than up and down. (See *grain* in the glossary.) It is sometimes difficult to tell which way the grain is running, but the board packaging should indicate the grain direction as “long” or “short” relative to the length and width of the particular board shipped. If the board was ordered cut by the supplier (this may be done to avoid freight charges) make sure to take that fact into account.

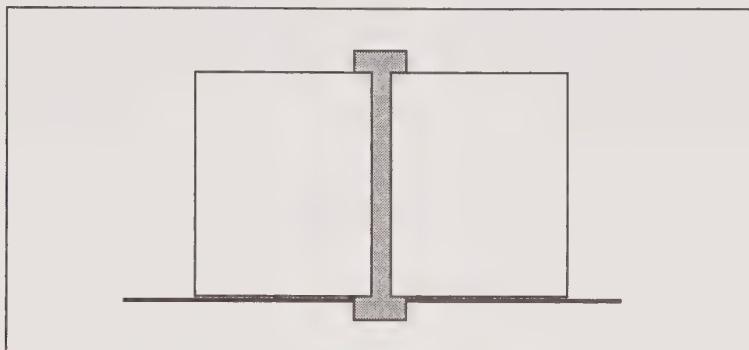
If a board shear is unavailable, it is quite acceptable to purchase board precut to standard sizes (9" x 12", 10" x 13", 11" x 14", 12" x 16", grain running long) and skip this step.

2. Cut two pieces of buckram with scissors to about 3" wide and at least 2" longer than the cover board. Cut the long length of the strips along the length of the roll, for correct grain direction. Trim them both to 2" wide. Trim one piece $1\frac{1}{2}$ " longer than the cover boards, the other $\frac{1}{2}$ " shorter. If you use a 4" roll of buckram, cut a single length $1\frac{1}{2}$ " longer than the cover board height, cut that piece in half lengthwise, then cut 2" from one end of one of the pieces.

If you are planning to use a center-sewn adhesive strip, the shorter strip of buckram is optional.

3. If necessary, roll the buckram strips against their curl so that they will lie flat without being held in place.

4. Lay the longer buckram strip on a piece of scrap paper and apply a thin layer of glue with a small brush. Remove the scrap.
5. Lay the two cover pieces over the glued strip, centered and aligned by eye, with at least $\frac{1}{4}$ " space between them. For thicker scores, allow more space in this hinge area, up to about $\frac{1}{2}$ ".
6. If you have difficulty with the parallel alignment of the boards, do this procedure on a marked cutting mat or a scrap sheet with a long, thick, straight line drawn near the bottom edge. The centering of the boards is relatively unimportant as long as they are aligned parallel.



7. Turn up the top and bottom ends of the buckram along the edges of the board and glue them down over the board, making sure they are pulled taut, but not so tightly as to be indented in the hinge area.

If you are using a center-sewn glue strip, you may use the inner cloth strip as well or skip to step 8. In making this decision, note that the adhesive on the tape will probably adhere better to the paper of the board than to cloth. However, if you have used C-grade buckram, it will be worth including the extra hinge cloth.

If you wish to duplicate the effect of the Archival Products spine-wrap binder, skip to step 11 and then follow the final directions in the paragraph below under Variations on the Simple Pamphlet Binder.

8. Apply a thin layer of glue to the shorter strip and glue it into place covering the hinge area on the inside, overlapping the first strip at either end. If you are not using a glue strip, skip to step 11.
9. Cut the center-sewn strip to the exact height of the score to be bound. If you are using boards cut to some standard size rather than to the measurement of the score, and did not use an inner cloth strip, cut the center-sewn strip to overlap the hinge cloth by about $\frac{1}{2}$ " at top and bottom.
10. Use a large glue brush dipped in water and shaken out several times to activate the glue on one side of the strip. Note that the glue on the strips available for separate retail purchase tends to be more easily activated (and more easily washed off) than that on the strips generally found in commercial binders.
11. Center the glue strip over the inner hinge of the cover. It is important to the appearance and durability of the finished binder that the sewing line on the strip be centered evenly along the middle of the hinge area. Flatten it thoroughly with a bone folder along the edges.
12. Round the outer corners of the binder using a corner rounder, with either a $\frac{1}{4}$ " or $\frac{1}{2}$ " radius blade. The binder can be folded shut and two corners rounded at the same time.

The binder is now ready for use for a single score. If a pocket is needed, continue with that process.

Variations on the Simple Pamphlet Binder

With a few differences of technique, any of the commercial binder variations may be duplicated in-house, if the materials are available. A clear polyester sheet may be substituted for the front cover board. To make a spine-wrap binder (easier than a sew-in strip binder), sew the score into the binder right after step 6, with the long cloth strip on the inside (not the outside) of the cover, then glue the short strip over the outside after the sewing is complete. The best way to apply the outside strip (once it is covered with a thin layer of glue) is to line up one edge with the edges of the folded tabs of the inner strip on one side of the cover. Then with the binder closed, wrap the outer strip the rest of the way around the spine and flatten it in place with a bone folder. More involved customizations for unusual formats are described at length below.

Pockets

Full Enclosure Pocket

The pocket described below is intended for circulating materials with heavy use expected, and can be added to purchased binders as well as those produced in-house. It accommodates more or thicker parts than commercial pockets presently on the market and is also sturdier, being made with heavier cloth. Samples in use show no tendency to come unglued along the outside edges, and experiment has shown that friction holds the parts in place, even when the binder is held upside down and shaken. The added accommodation of this pocket partly depends on the parts having room to fan out a little in the pocket, so it works best to pick a binder that is a size large for the score (at least 1" taller).

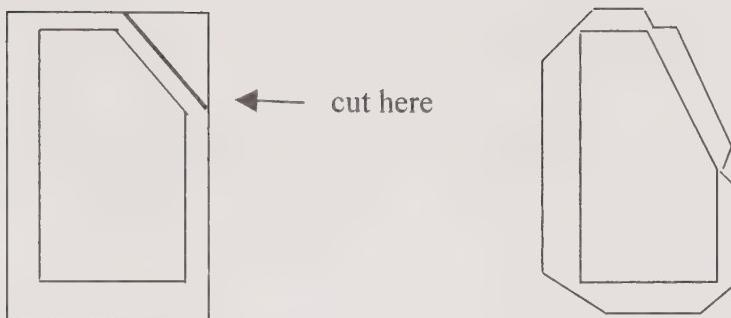
Materials required:

- the binder to which a pocket is to be added
- a piece of 0.010 *tan board*, 8" x 11", grain running long (These may be pre-cut in quantity)
- a piece of heavy buckram, 9" x 12", grain running long (These may be pre-cut in quantity)
- cutting board, ruler and x-acto knife
- glue and brush, scrap paper, bone folder

1. Cut the top corner of the tan board as shown below. These pieces may also be precut in quantity.



2. Lay the cut board piece onto the piece of buckram exactly as shown in the figure on the next page. Cut the buckram so that there is a $\frac{1}{4}$ " overlap along the pocket opening edges (three including the diagonal) and a $\frac{3}{4}$ " overlap along the other two edges. If the buckram is glazed only on one side, be sure to cut it with the diagonal on the right, with the unglazed side up, as shown at the left side of the figure on the next page. Cut notches as shown at right.



Note that there should be a little bit of buckram showing around the corners of the board, even in the deepest notches, so that no bare board is exposed on the corners of the finished pocket.

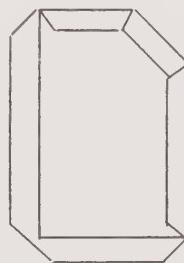
Glue Board to Cloth

3. Flip the tan board over onto a scrap sheet and apply a thin layer of glue to the back side of the board, then lay the board back onto the cloth with the notches lined up as shown above.

The board sticks firm quite quickly. It is best to line up the corners of the diagonal cut first, as there is more leeway with the outer corners.

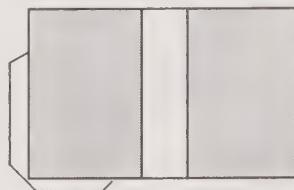
4. Glue down the three $\frac{1}{4}$ " cloth flaps around the open edges of the pocket. (The exact order does not matter, but do not glue down the $\frac{3}{4}$ " flaps around the outside edges.)

Use scrap paper to protect your work area while applying glue to the buckram flaps. Use a ruler and bone folder when turning up the flaps if desired. Use a bone folder to tuck in and flatten the little fold of buckram at each corner after the first edge is folded down and before the second edge is folded over it (no matter which edge is folded down first). The pocket should now look like this:



Glue Pocket to Binder

5. Lay the back of the opened binder over the pocket so that it is positioned on the inside back cover of the finished binder. (If your library places music pockets at the front of the score, you will need to adjust the gluing directions above in order to place the pocket correctly, right side out.) The card stock should be covered completely by the board of the cover, with only the buckram overlap showing.



6. Glue down the cloth overlap around the back cover of the binder.

Let the new pocket dry for at least thirty minutes before inserting music.

Once you are acquainted with the gluing process, it is possible to save time and scrap paper by applying the glue to the buckram instead of the tan board, then gluing the board onto the buckram and the whole pocket into the binder, all before the glue dries on the cloth. This may not work in low-humidity areas.

Light Pocket

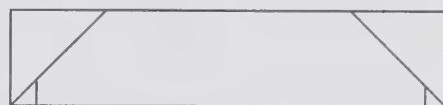
The pocket described below is quicker to make but may be less sturdy and certainly affords less protection to the parts it encloses, so it is only recommended for music that is not expected to receive heavy use. There is a slight danger that if a part is placed in the pocket crookedly its corner edge may protrude beyond the edge of the folder, causing it to be damaged. However, if the pocket is made as described, this is unlikely.

Materials required:

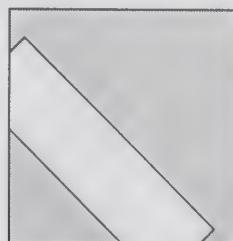
- 10" x 13" or 11" x 14" binder
- 0.020 card stock
- 4" width roll of F-grade buckram (or cut pieces from a full size roll)
- paper cutter or x-acto knife and cutting mat, scissors
- straightedge, bone folder
- glue and brush, scrap paper

Make Template

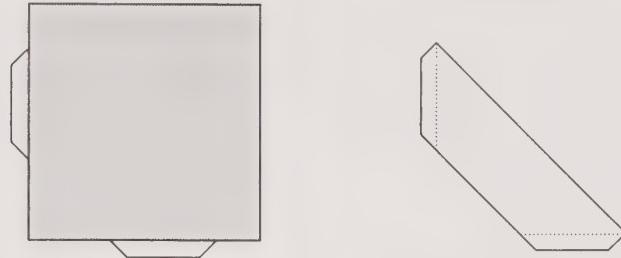
1. Cut a piece of 0.020 card stock 4" x 14".
2. Cut triangles from each end as shown, measuring and marking exactly 4" from each end of the strip so that the triangles are right triangles with the two short sides both 4". Trim off a further $\frac{3}{4}$ " from each end of the long edge, at right angles to the edge.



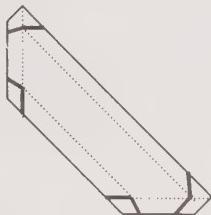
3. Lay the resulting blunt-ended shape on a pamphlet binder, on the outside of the back cover. Check that the triangle-cut edges are square with the edges of the binder and trim them if they are not.



4. Place the template inside the pamphlet binder and move it so that square points of the blunted ends are even with the outer edges of the binder, as shown, and draw light lines on the card stock with a pencil along the edges of the binder. Remove the template from the binder.



5. Measure in $\frac{3}{4}$ " from the ends of each pencil line, and cut tabs as shown in the figure below. The size of the tabs is shown somewhat exaggerated. Use this template to cut buckram pieces for the pockets.



Glue the pocket

6. Crease the two long tabs upward along a ruler with a bone folder. With a small brush apply a thin layer of glue along the edge of each long tab (it is not necessary to use a stencil, just a protective scrap underneath). Fold the tabs over and glue them down, flattening them thoroughly with the bone folder.
7. To form the pocket, place a strip in a closed binder so that the short tabs show around the edges of the binder.
8. Apply a thin layer of glue to each tab and glue into place outside the binder.

Allow the new pocket to dry for at least half an hour before inserting parts. If you trust your buckram sufficiently, you can skip all of the trimming and gluing needed to turn the edges under and simply glue the projecting ends of the buckram to the back of the binder at step 4 of the template process (using that shape as the template). This leaves raw-cut edges on the pocket but can be produced in under two minutes.

Wide Spine Pocket Binder

While no single signature score will be too thick to fit into a commercial pamphlet binder, items with many parts sometimes do require wide pockets with additional spine width to accommodate the extra material.

Materials required:

- score and parts to be bound, sewn into cover sheets (stapled binding is not recommended for thick parts)
- pencil, scrap, and ruler for measurements
- pressboard or gray-white board, F-grade buckram, board shear (or other cutting arrangement)
- glue, brushes, and scrap paper

- one to three thin ($\frac{1}{4}$ ") wooden boards, smaller than the parts to be bound, or a sheaf of scrap paper, for help with shaping the pocket
- 2" center-sewn tape, scissors, water, and brush

Measure Item

The measurements will include a $\frac{1}{4}$ " margin on top and bottom, and the pocket for the parts also requires extra margin. Thus the following formula should be used:

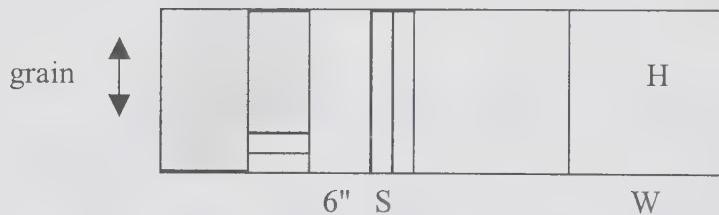
$$\mathbf{H} = \text{height of item} + \frac{1}{2}"$$

$$\mathbf{W} = \text{width of item} + 1"$$

S = Place the score and all the parts together in a pile, spine edges together. Fan the pile over a little (as if the parts were lying in the binder, which includes 1" of spreading space), stand a ruler next to the pile, and decide how wide the spine should be to keep the parts standing upright and a little bit compressed at the spine edge, so they do not slump over in the binder on the shelf. This is a judgment call, but it takes only a little practice to become proficient. This spine measurement will be used for both the pocket and the spine, so that the finished binder stands square on the shelf; the thickness of the score will be accommodated in the hinge, if necessary. The pocket may appear to be deeper than necessary, since the parts will be wider at the spine edges than at the outer edges, but that's all right.

Measure and Cut Board

1. Cut a large piece of board, **H** high and about 4 times **W** wide, making sure the grain runs parallel to **H** (i.e., short). (The exact width that will be needed will be $2\mathbf{W} + 2\mathbf{S} + 12"$)
2. Cut two pieces to width **W**, two pieces to width **S**, and two pieces 6" wide. Take one of the 6" pieces and cut two pieces **S** high from it. The figure below shows all the pieces laid together as cut; the shaded area is scrap.



For very large or small binders you may wish to cut a wider or narrower pocket, but 6" works well for the range 9" x 12" to 11" x 14" of score size.

Measure and Cut Buckram

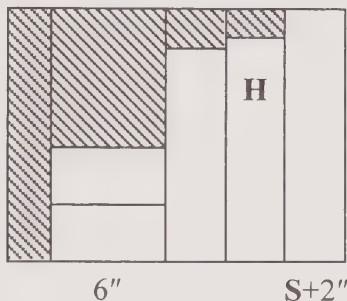
3. Cut with scissors a large piece of F-grade buckram cloth to (roughly) **H** + 3" high by $4\mathbf{S} + 13"$ wide, with the grain again running along the spine. The cutting diagram at step 6 shows the trimmed measurements, but add about 1" each way to allow for trimming.
4. Trim one long edge straight, turn the piece a quarter turn clockwise and trim the short edge square. Turn the piece a quarter turn clockwise again and trim the other long edge square to the height of **H** + $1\frac{1}{2}$ ".
5. From one end of this large piece, cut three smaller pieces **S** + 2" wide. Set the first one aside; it will be the outside of the spine.

Trim the height of the second piece to exactly **H**. This will cover the outside of the pocket.

If **S** is more than $\frac{1}{2}$ ", trim the height of the third piece to **H**— $\frac{1}{2}$ ". This extra spine piece will be used to line the inside of the spine. For spines narrower than $\frac{1}{2}$ " this second liner is unnecessary, since the tape used to glue in the score will cover the entire spine area and will stick better to the board than to a cloth lining.

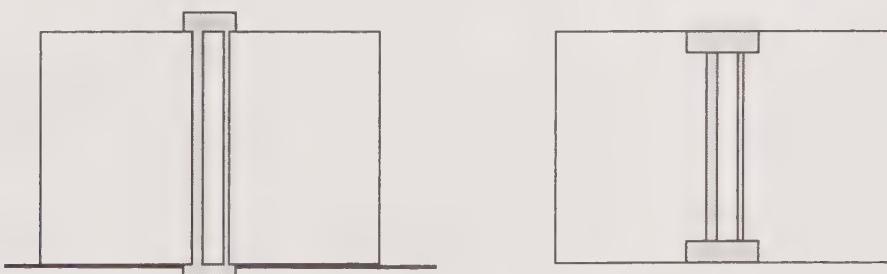
6. Finally, cut a piece 6" wide and then from that cut two pieces 6" wide by **S+2"** high. It is important that the grain run short on these pieces, which is why they are cut this way, rather than as a fourth piece in the previous step.

The diagram below shows the pieces laid together as cut. The rightmost piece will cover the spine, the next the outside edge of the pocket, the next will line the spine (it is the one to be discarded if the spine is less than $\frac{1}{2}$ " wide) and the last two cover the top and bottom edges of the pocket. The shaded areas are scrap.



Glue Cover Pieces

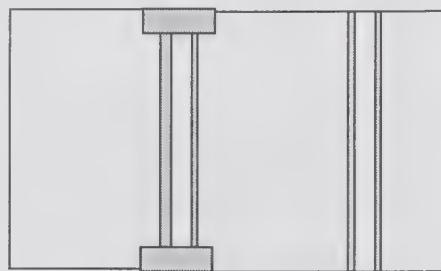
7. Set out a large piece of scrap paper. Apply a thin layer of glue to the longest piece of buckram and remove the scrap paper.
8. Quickly but carefully lay the spine and cover pieces as shown below, with about $\frac{1}{8}$ " between them for the right hinge, but the hinge area to the left of the spine piece a little wider to accommodate the thickness of the score (unless it is very thin—eight pages or less). Fold over the $\frac{1}{8}$ " overlap at top and bottom. You may wish to draw a thick straight line on the large scrap sheet covering the work area, to make it easier to set the cover boards parallel, as shown at left below.



If you are using the inner spine strip (the shortest buckram piece), glue it in place next, then use a bone folder to shape the cloth along the board edges on both sides of the cover. If you are not using the inner strip, run the bone folder along the edges of the board through the cloth on the outside of the cover. Use a strip of scrap underneath, since that process will make a double line of glue on the work area.

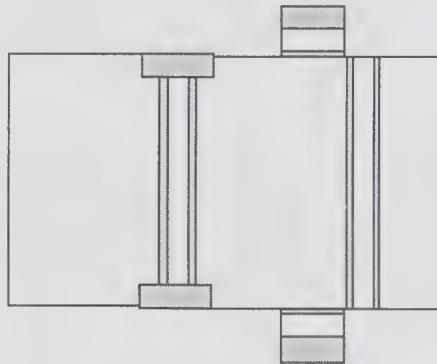
Glue Pocket

9. Lay out a piece of scrap paper and apply a thin layer of glue to the remaining long spine piece of buckram. Discard the scrap.
10. Center the pocket spine piece on the cloth, then position it under the cover on one side and the pocket piece on the other, as shown.

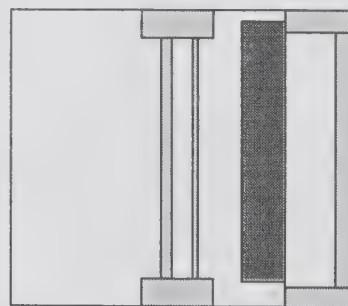


The spaces between the cover, spine and pocket pieces are exaggerated to show the buckram more clearly; leave just enough to accommodate the square fold of the pocket, a little less than $\frac{1}{8}$ ". The first several times you make a pocket, it will help to set the cloth with the centered spine piece in place against the cover. Try folding the spine piece up into place, to get a sense of exactly how much "hinge" space is needed. Then use the same amount of space with the pocket piece on the other side.

11. Apply a thin layer of glue to each of the shorter pieces of buckram. Center each short spine piece on the buckram, then place the pieces as shown.

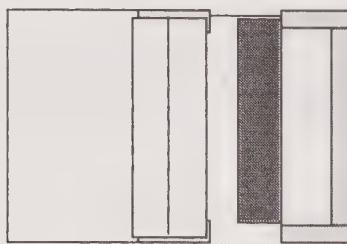


12. Place spacer boards or a sheaf of scrap paper the approximate depth of the pocket into the pocket area of the cover and fold the pocket into place, making sure the pocket board is settled on the top edges of the top and bottom pocket spine boards, rather than sagging in between them.



Glue Item Into Cover

13. Cut a section of 2" center-sewn tape the height of the score.
14. Brush one sticky side of the tape (i.e., one flat side, with the seam down the middle) with water until the glue is activated. Note that the glue is activated—and washed off—more quickly with this tape than with the tape in commercially made binders. It may take only one brush stroke on each side of the seam.
15. Press the tape onto the newly constructed folder, with the center seam lined up along the *left-side* hinge (the side away from the pocket, not next to it), centered in the hinge area. Center the tape up and down, so that there is a $\frac{1}{4}$ " margin at top and bottom. If a cloth strip was used on the inside of the binder, take particular care that the tape is glued down completely on both sides, working it into the hinge area on either side with a bone folder.



16. Glue the score into binder as usual and place the parts in the pocket. Note that it is still important to press on the score with the binder shut (as well as flattening the edges of the tape with the bone folder); the width of the spine and the extra space between the spine and the pocket should make this possible.

Wide-Spine Pocket Case

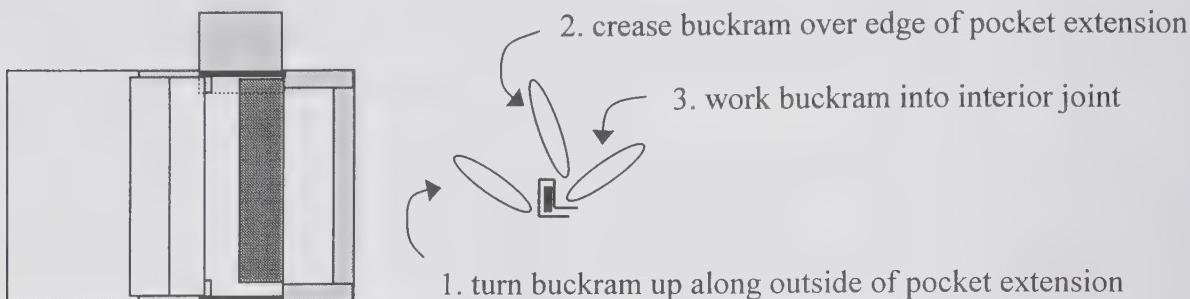
This is a variation on the pocket binder above, but is intended to house the entire item, not just attached parts, in the pocket. There is no provision for gluing a score along the left hinge, and the pocket area may be altered to protect the enclosed material from dust. If dust exposure is not an issue, simply make the binder as above but stop at step 12. (Use the inside spine strip at step 8.) If extra dust protection is desired, the top and bottom edges of the pocket can be extended to the spine with the altered steps described below. It is also possible to simply widen the pocket to reach inward to the hinge, but this may make it harder for patrons to remove the enclosed material without damage. Gray-white board, rather than pressboard, is recommended for this type of enclosure.

At step 2: Cut the board pocket spine pieces to a width of **W** instead of 6" (still with a height of **S**). This will extend the top and bottom edges of the pocket all the way across the back of the binder.

At step 6: Cut two extra pieces of buckram **W** minus 6" wide by $2S + 2"$ high. These will support the extra length of the pocket top and bottom. For greater stability and a neater appearance, cut these and the top and bottom buckram pocket pieces together, rather than as separate pieces. A 1" slit will be needed where they join, as shown:



After step 12: Apply a thin layer of glue to one of the extra pieces of buckram. With the back of the binder exposed, glue one edge of the buckram to align with the outside buckram flap at the top of the pocket, from the edge of the pocket to the edge of the spine, then lay the binder on its back.



Use a bone folder to turn the edge of the wide flap up and over the pocket extension and to define interior angle; make sure the buckram is glued down to the very bottom of the pocket piece on the interior angle before gluing down the 1" flap onto the inner cover. Repeat with the other buckram piece at the bottom.

Media Housings

When media is circulated with a pamphlet score, wide-spine, wide-pocket binders can be adapted to a variety of media attachments, including videos and disks, in their cases. However, a number of other alternatives can be considered as well, especially since electronic or other media only tend to circulate with paper items under unusual circumstances. Depending on these circumstances, the usual limits of durability/security concerns may be relaxed to allow a broader range of binding solutions. Library supply companies offer plastic cases that accommodate paper materials up to 8½" x 11" with various media attachment options. Tyvek envelopes with Velcro clasps, which can accommodate thin materials up to 9" x 12", may be useable in some situations. More durable mixed media pouches made specifically for that purpose are available through library vendors and are common in public libraries. If durability is a significant concern, and especially if items will be shelved, some library binders offer case bindings that incorporate archivally approved polyester media cases. Even if your binder does not advertise such an option, the company may offer it if you ask specifically. Another option for CDs attached to scores is to add a soft flat pocket to the back of the score. Commercial pockets of this type tend to be hard to use, since they are usually glued flat to the cover, making it hard to get the disk in and out without ripping the pocket. Directions and a template are included on the following two pages for a more durable version that can be produced in-house.

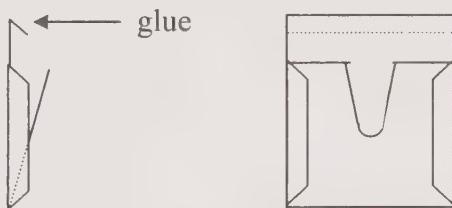
CD Flip Pocket

This pocket will accommodate a single CD and is intended for use with pamphlet binds or with case bindings that include an allowance for the CD in their spine and hinge construction. Adding them to publisher bindings that do not allow the extra space is likely to place a destructive amount of strain on the rear hinge of the cover. These pockets work better than most commercially available CD pockets because the pocket itself is not glued rigidly to the back of the book, so that it is easier to get the CD out without ripping the pocket or breaking the CD.

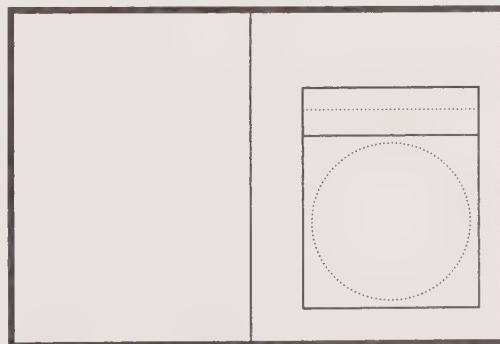
Materials required:

- bound score and CD
- pen and lightweight paper, ruler, 0.020 board

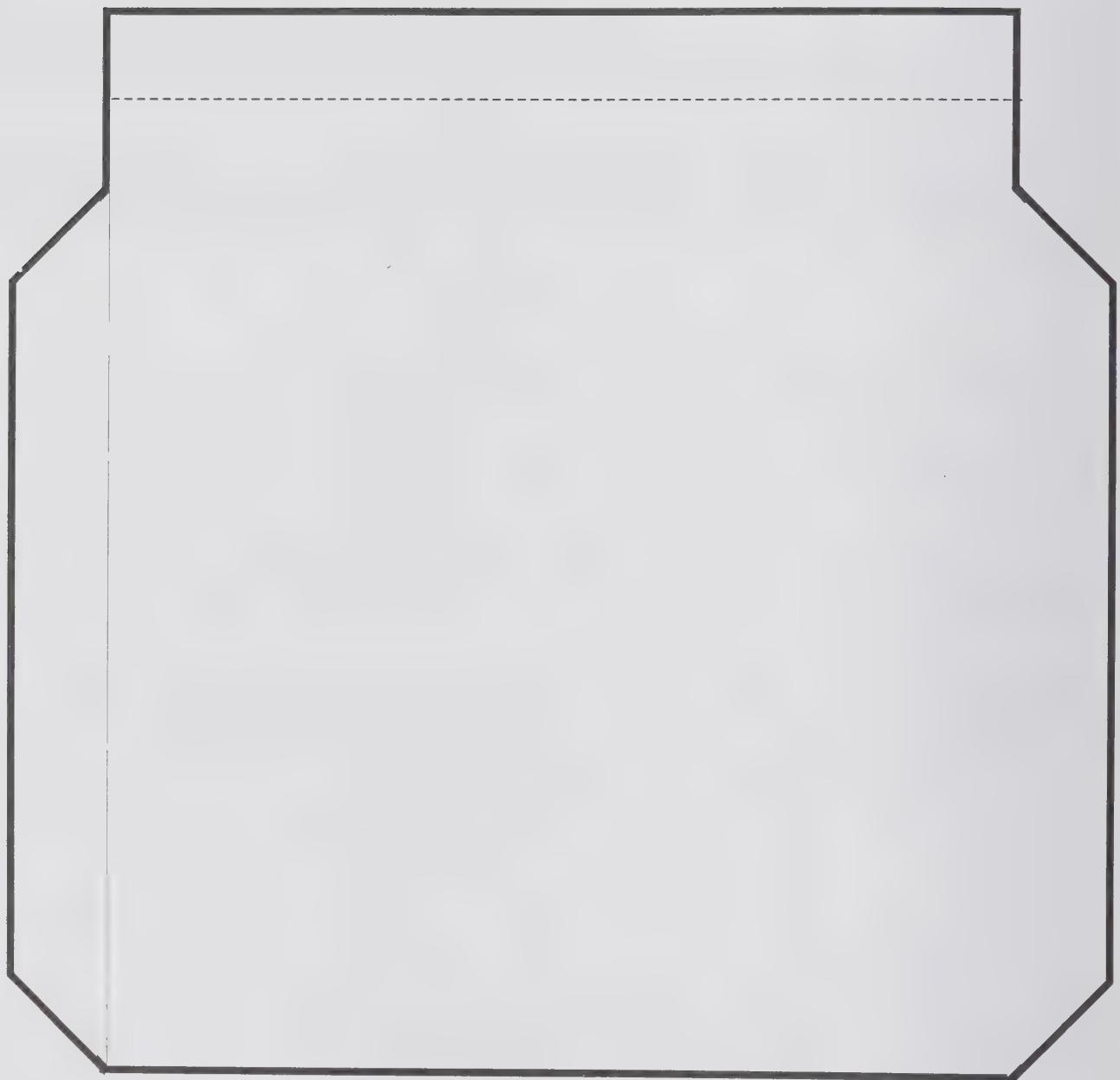
- Tyvek or 0.010 tan board (Tyvek is better)
 - paper cutter, scissors
 - Tyvek tape or buckram cloth, preferably C-grade
 - glue and brush
1. Trace the pattern pieces on the following two pages onto the light weight paper and cut them out. Trace all three pieces onto the 0.020 board, using a full 11" piece of the card stock to join the two larger pieces as indicated, to keep as a template for future use.
 2. Trace the large pattern piece onto Tyvek or 0.010 tan board, the smaller one onto the buckram, and cut the pieces out. If you use Tyvek tape, simply cut a strip the length of the pattern piece; the width is not so important.
 3. Fold and glue the Tyvek or tan board piece as indicated on the pattern and in the figure below (fold the bottom section up and glue the side flaps over it). Crease all folds along a straightedge and flatten them with a bone folder. Crease the top inward along the dotted line and apply a thin layer of glue to the creased flap.



4. Turn the pocket over (plain back showing, gluey flap underneath) and glue the flap inside the back cover of the binder or book, leaving at least 2" of extra space above the pocket. The back of the pocket should be exposed, covering the glued-down flap.
5. Glue the buckram piece in place over the top of the pocket, half on the pocket and half on the book cover. In the illustration below, a dotted line shows the top of the pocket underneath the Tyvek or buckram strip.



6. Allow the pocket to dry at least thirty minutes before inserting the CD by flipping the pocket up.



Join this line to the bottom line on the pattern piece on the previous page.

The Tyvek or board piece cut from this pattern will be folded along this center line.



This is the buckram piece

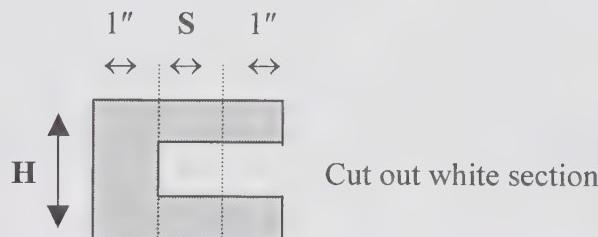
Wide-Spine Binder with Media Pocket

A full-size music pocket is a poor solution for attaching most media, since even videocassettes can slip out between the edge of the pocket and the spine of the cover. However, adapting the wide-spine binder to hold media of any sort is relatively simple. Construct a wide-spine binder to accommodate the pamphlet score and the depth of the media attachment (in its hard cover or case), following all of the steps for constructing the cover but omitting the measurements and directions for preparing the pocket. For the measurement of S , set the media item on the score and measure the combined depth. Once the binder is constructed, measure and cut pieces to make a small pocket for the media box, as follows:

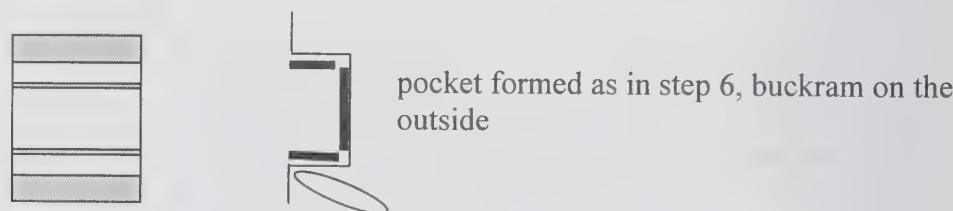
Materials required:

- binder with score in place, media to attach
- board and buckram scraps

1. Take the measurements of the media box, rounding up to the nearest $\frac{1}{8}$ ". It works best to have the media boxed widthwise to the cover, so have H (which runs with the grain of the binder) be the shorter measurement and W be the longer for this project. If the media box is too long to accommodate in the width of the cover, then it can be attached lengthwise.
2. Cut one piece of board $H \times W$ and two more pieces $W \times S$, grain running with H and S .
3. Cut one piece of buckram $(H+2S+2") \times W$ and another piece $H \times (S+2")$, grain running with H .
4. Cut a section out of the small buckram piece $S+1"$ long and 1" wide (the width of the remaining flaps will depend on the width of the whole piece) as shown below. This cutout will form a thumbhole for pushing the media box out of the pocket.



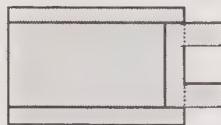
5. Apply a thin layer of glue to the large buckram piece and place the board pieces as shown below (the dimensions in the figure are for a videotape). Leave just enough space between the board pieces to make square corners like those of a part pocket.



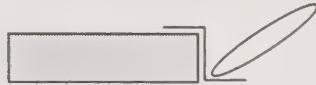
6. Glue the pocket into place on the back cover of the binder as shown with the tabs glued above and below the pocket, making sure that the left end of the pocket is near enough to the spine that the media box cannot fall out on that side. Leave at least 2" from the spine, however. Place the media box (with or without its contents) in the pocket, both to make sure that it fits and to help with the next steps. With the media

box in place, use a bone folder to snug the buckram flaps against the binder cover in the angles (see at left above).

7. Apply a thin layer of glue along the solid 1" end of the cut buckram piece and glue that edge to the right-hand side edge of the pocket with the two cut tabs hanging out over the edge.



8. Use a bone folder to fold the two end flaps down over the media box and out over the inner surface of the binder. Use the point of the bone folder to crease the inner angle between the side of the media box and the binder surface.



9. Apply glue to the newly creased flaps (only the section beyond the crease, where it will be glued down to the binder) and glue them down to the binder cover. Remove the media box and let the glue dry for at least thirty minutes before returning the media item to the pocket.
10. Patrons will probably be able to figure out how to remove the media box without instructions, but these could be added to the pocket in ink or on a label.

Custom Enclosures

Phase Boxes

The Library of Congress, during the development of a multiphase program of book treatment priorities, determined that the most appropriate treatment for some irreplaceable, little-used items that were too brittle to repair would be isolation and protection in a simple box. These books could then be left quietly on their shelves until such time as they assumed a higher priority or a new repair technique was developed. The boxes came to be called "phase" boxes, after the program designation.¹ Most libraries have materials that fall into this category. While music is less likely to do so, given the format and the type of use it receives, the treatment does apply to certain classes of scores, as well as music-related books.

There are several ways to build a *phase box*, but only one will be given here. This style can be constructed in about twenty minutes without the use of a board shear, is extremely sturdy and has a lid that will stay shut without needing to be tied or otherwise secured in place. Any box that gives rigid support to its contents without giving them space inside to sag will answer the purpose, however, and there are many examples in library binding literature.² The box described below cannot be made effectively for thin scores. If scores have spines less than $\frac{3}{4}$ " deep, use a portfolio binder or wide spine pocket case. The latter may, in fact, be used for scores of any size and width and may be constructed in about the same amount of time as the phase box.

Materials required:

- the score to be boxed, having a spine at least $\frac{3}{4}$ " deep
- ruler, *caliper*, scrap paper
- a sheet of 0.040 tan board, about twice the height of the score and four times the width, grain running with the spine (thus probably short)
- large cutting mat, T-ruler, awl, bone folder, heavy x-acto knife, no. 24 blade
- PVA glue, small glue brush, *bulldog clamps*

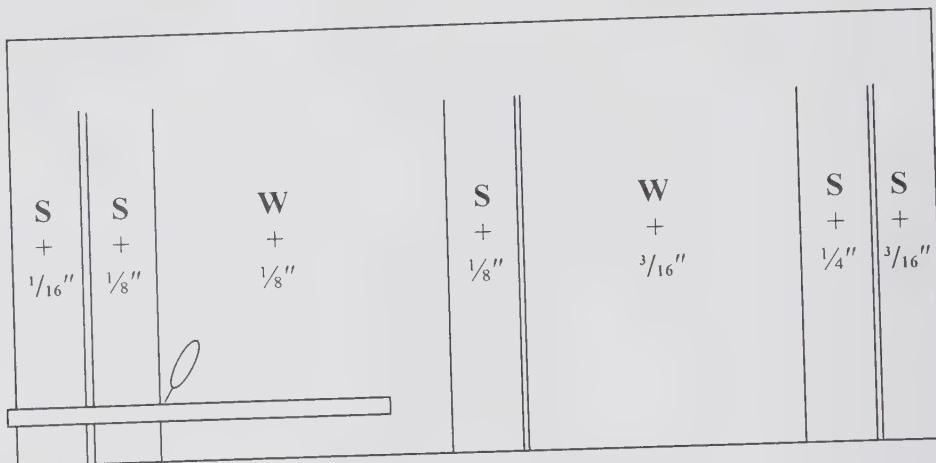
1. Measure the score in all three dimensions. Use the ruler for width and height, taking measurements at several places on the score and using the largest result in each case. For the width of the score, you must allow for the roundness of the spine; otherwise the box may not close well and the score's binding may be stressed. The best way to do this is to lay the book with its spine edge against the wall or some other right angled support and slide the ruler along the book, with its zero mark against the wall, taking down the largest measurement thus observed. A ruler with a zero mark that is not flush with the end will of course require correction in its reading.

Use the caliper to measure the depth (thickness) of the score, making sure that the caliper can slide freely around all four edges, but without unnecessary excess space. A description of calipers and their use is found in the glossary.

2. Round up the all of the measurements to the nearest $\frac{1}{8}$ ". If any measurement is exactly on a $\frac{1}{8}$ " mark, add an extra $\frac{1}{8}$ ".

These rounded measurements will be the size of the inside of the box, into which the score should fit easily, but without room to slide from side to side or to sag.

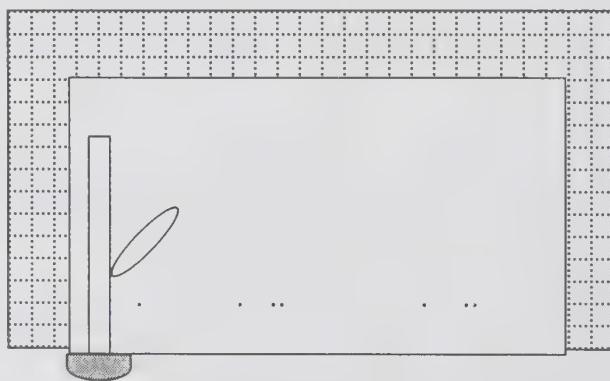
3. Set the .040 board on the cutting table and check that the left-hand edge is square with the T-ruler. Use the regular ruler and the awl to mark each measurement shown on the following diagram.



Place the sheet with the grain running up and down (thus the wide edge facing you) and start your measurements from one narrow edge, using the ruler set close enough to the wide edge to be certain that it is parallel. If the ruler is not parallel to the wide edge of the sheet, all the measurements you make with it will be slightly short, and the box will be slightly too small.

4. Use the awl to mark a pinhole where each line on the diagram should cut across the sheet. Note that the double lines are $\frac{1}{8}$ " apart, and S and W refer to your rounded-up measurements.
5. Move the cutting mat beneath the board to the edge of the work table and the board a little bit over the edge, so that you can use the T-ruler to give an accurate perpendicular.
6. Place the sharp end of a bone folder into each of the pinholes you have made, then set the T-ruler so that you can run the bone folder up and down along it, so as to score the board along each indicated line.

Check continually to be sure that the T-ruler is perpendicular to the edge of the board. The T-ruler will probably not be long enough to reach all the way to the other edge of the board—this is all right, since it probably will be long enough to mark the full height of the box.

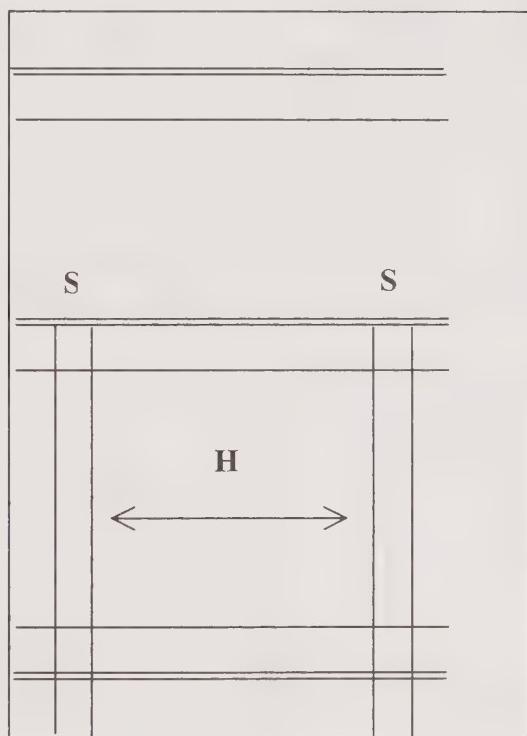


7. When all the lines are scored, compare your board to the diagram at step 3, line by line, to make sure you have not missed any indicated measurements.

8. Using a board shear or knife, cut the board off at the rightmost line, which delineates the edge of the box. You may wish to mark that line with a pencil first to make sure you cut along the correct one.
9. From the excess board, cut two small (about 1" square) scraps, which you will use later for measuring board widths (referred to below as "bw").
10. Set the board back on the cutting table as before, then turn it one quarter turn counterclockwise.

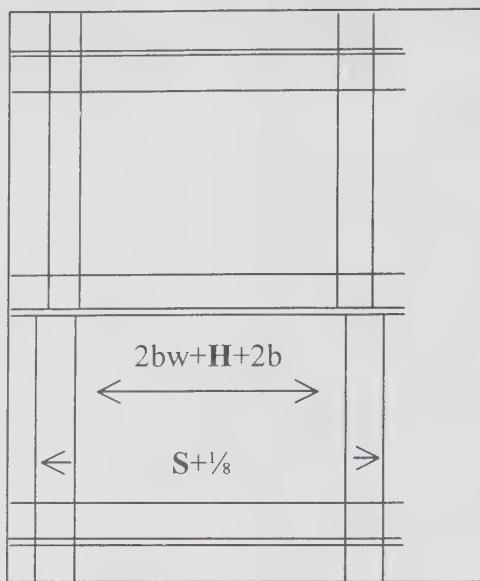
Of the two spine lines in the middle of the board, the double line should be on top.

11. Setting the ruler parallel to any one of the lines scored across the lower half of the board, mark with pin-holes the **H** measurement (rounded-up height of the score), centered on the scored part of the sheet by eye so as to leave space on either side for the side flaps. (See diagram.)

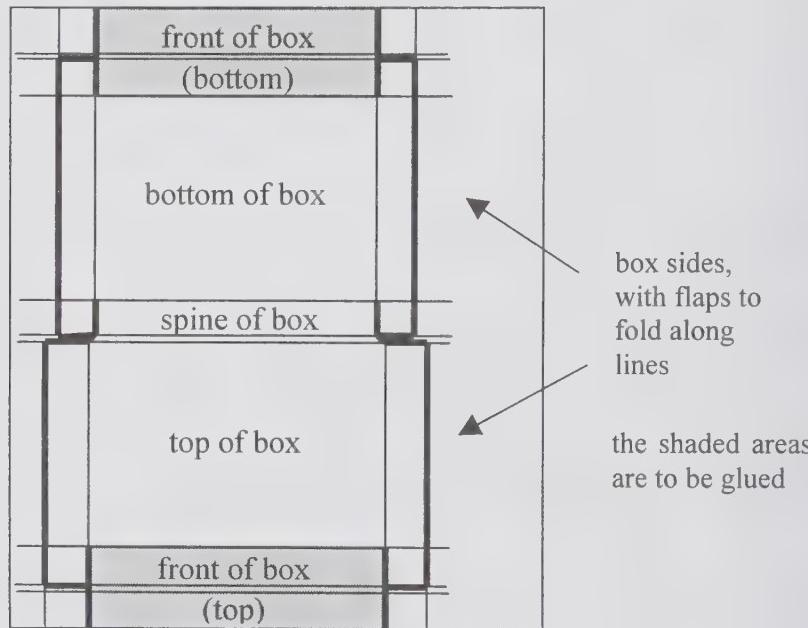


The T-ruler may not have reached all the way across the sheet when you scored your vertical lines; if not, center your new measurements within the area that is scored.

12. Mark the spine-width (**S**) measurements on either side.
13. Use the T-ruler and bone folder to score lines from the bottom edge of the sheet only up to the double score in the middle. (See the illustration above.)
14. Turn the board half way around, so that the newly scored lines are above the double line in the middle.
15. Use the double board thickness jig to measure two board thicknesses on the outside of each score from your previous **H** measurement. Mark these, then mark the **S + 1/8"** measurement on either side of these, as shown on the next page.



16. Score these with the bone folder and T-ruler, from the bottom edge to the middle double score.
17. Cut along all the bold lines on the diagram below to produce the various flaps that will fold along the sides of the box.



It is simplest to cut these if you can visualize how each flap will tuck into place; if you cannot picture it, just be very careful to cut only the bold lines.

You may use either the board shear or a ruler and x-acto knife to cut the outer edges of the wider half of the box, but must use the knife for the edge of the narrower section. Stopping the shear blade partway down does not usually work.

The best method for cutting the board is to line up a steel (not aluminum) ruler, *cork side on top* if there is one, along the line to be cut, and use a heavy-handled no. 24-blade x-acto knife. Each cut will require three or four passes if the knife is sharp. The first pass is only to make a guide line; do not try to put pressure on the knife, and concentrate on cutting straight along the ruler. The second pass deepens the guide line. For the third and fourth pass, shift your grip on the knife so that you are holding it in a fist, with your thumb on the round end of the handle.



This grip looks and may at first feel awkward, but it allows the maximum strength and control of the blade for forceful cutting. You can control the blade with your thumb, which is much stronger than your index finger, and only a little less well coordinated. Now you can apply pressure so that only one or two cuts more are needed to go through the board. After the third cut you can usually set the ruler aside.

18. Use the bone folder and ruler to crease upward and then fold down along all the scored lines in order to form the box.
19. Once you crease the board along each score, fold it all the way over and flatten it firmly down with the bone folder. In some cases you will then need to unfold it so that the next flap can be creased and folded. If you skip this flattening step, the box will tend not to close properly.

Make sure each folded-over flap and side is lying straight and square before flattening it with the bone folder.

The double scores produce wider folds; do not try to fold along each score separately, but do not flatten them too hard with the bone folder.

20. Shape the box, apply glue to the two edges indicated on the diagram, fold the flaps in from either side of the box and fold the glued edges over the flaps.

Clamp the glued ends in place with bulldog clamps for about five minutes.

21. When the clamps are removed, place the score in the box, check the fit and that the box closes. If the front covers of your phase boxes tend to flare out by the spine, try making your double board width allowance slightly larger at step 14.

Portfolio Binder

Scores narrower than $\frac{1}{2}$ " can be put into standard or wide-spine commercial portfolio binders, but a few are too thick for them while still being too thin for a phase box, and some are too tall or wide for common sizes. For these, custom portfolio binders may be made in-house. Note that phase boxes are preferable to portfolio binders for thick scores both because they provide more support and because they are easier for a patron to deal with (the flaps get more unwieldy the larger the item). The wide-spine pamphlet cases described in the previous chapter are also recommended; the only advantages of portfolio binders over these are maximum dust protection and commercial availability.

Materials required:

- the score to be housed
- 0.020 tan card stock
- pressboard or gray-white board
- F-grade buckram
- caliper, pencil, ruler, bone folder
- two large pieces scrap paper, PVA glue, brushes, large weight (a piece of heavy shelving board larger than the score to be bound will work well)
- pen with waterproof ink

Measure and Cut Card Stock Envelope

1. Measure the score in all three dimensions, using ruler and caliper. **H** = height, **W** = width, **S** = depth of spine. See the glossary for measuring with a caliper.

All measurements should be taken at the widest points (measure at several places and use the widest for **H** and **W**, have the caliper move freely for **S**) and rounded up to the nearest $\frac{1}{8}$ ". If any measurement is exactly on a $\frac{1}{8}$ " mark, add an extra $\frac{1}{8}$ ".

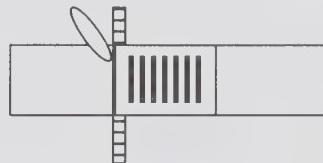
2. Cut one piece of card stock to the width of the score and three times the height, the grain running long (along the height of the score). See "Variations on Portfolio Binders" below for suggestions regarding using less board for smaller flaps.

Cut a second piece the height of the score and three times the width, the grain running short (along the height of the score).

Score, Fold, and Glue Card Envelope

3. Center the score on the first (very tall) piece, with a ruler laid underneath the score, along the top edge. Let about $\frac{1}{16}$ " of the edge of the ruler show beyond the edge of the score.

Score the card stock along the ruler with the pointed end of a bone folder.



Without moving the music, reset the ruler along the bottom edge and score the tan board along it in the same way.

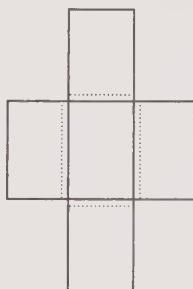
4. Measure and mark with pinholes, then score a second line **S** distance out on either side of the first two scorings.
5. Fold the card stock along the scored lines, flattening all four folds with a bone folder.

It is easiest to fold the card stock over the edge of a ruler and to do the inside lines first.

6. Fold both flaps in and turn the folder over, leaving a blank back the size of the score.



7. Apply a thin layer of PVA glue to the back, using a large brush.
8. Lay the glued section over the center of the second sheet of card stock and weight it down while it dries for at least thirty minutes.
9. Laying a ruler along the edges of the first (top, folded) piece of stock, score the second piece along both sides of the first one.
10. Mark and score lines $S + \frac{1}{16}$ " outward from the first scores, and fold and flatten along the newly scored lines to create the side flaps.



11. Set the score in the portfolio and check the fit. Trim or round the corners of the folded edges if needed or desired.
12. Label the bottom flap "fold me first" in ink on the inside. Folding the bottom flap first gives it extra support from the overlapping flaps, helping it to support the score inside the binder. The ink will have plenty of time to dry before the score is placed in the binder, but make sure that it is not water soluble.

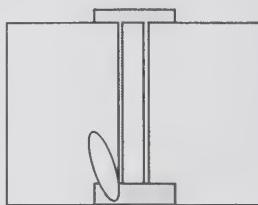
Measure, Cut, and Glue Cover Pieces

13. Measure the height, width, and depth of the finished portfolio, with the score inside (fold a different flap first for now!). Round the measurements up to the nearest $\frac{1}{8}$ ".
14. Cut three pieces of the cover board, two $H + \frac{1}{4}$ " x $W + \frac{1}{4}$ ", and one $H + \frac{1}{4}$ " x S . The grain should run with H .

The portfolio will be set in the finished binder flush along the bottom and spine edges but inset $\frac{1}{4}$ " at the top and outside.

15. Cut two pieces of buckram, one $H + 1\frac{1}{2}$ " x $S + 2$ ", the other $H - \frac{1}{4}$ " x $S + 2$ ".
16. Set out a large piece of scrap paper. Apply a thin layer of glue to the longer piece of buckram and remove the scrap paper.

17. Quickly but carefully center (by eye) the spine piece onto the glued buckram and lay the cover pieces as shown below, with about $\frac{1}{16}''$ - $\frac{1}{8}''$ between them, and fold over the $\frac{5}{8}''$ overlap at top and bottom.



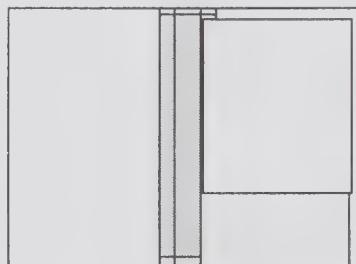
Set the shorter piece of buckram on more scrap paper and apply glue.

18. Lay the short piece as shown, press it into place, and score along the hinges with a bone folder.



Turn the cover over and score along the hinges on that side. The smooth side of the folder (with the long piece of buckram) is the outside.

19. With the flaps closed, apply glue to the back of the tan board portfolio and set it into the folder on the right hand side, flush along the bottom and spine edges of the cover board.



Open the flaps, place a large weight over the glued portion and allow to dry for at least thirty minutes.

Variations on Portfolio Binders

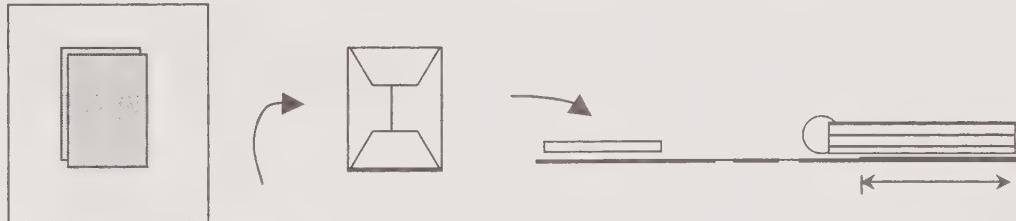
The simplest variation involves the overlap of the envelope flaps. Decreasing the amount of overlap may cut down on damage to the binder since the flaps can easily become battered while they are opened out. However, since the score is likely to be fragile and stored tightly on a shelf, at least one of the flaps should be cut to cover the entire score inside and folded directly over the item to prevent friction or scoring from the edges of the other flaps. (The “fold me first” sign on the interior of that flap is an important step; it may be moved to the side flap.) The two best candidates are the left hand flap, which is protected from damage by the cover, and the bottom one, since that also insures against a heavy score falling out of the cover when it is removed from the shelf. Ideally, both of these should be full size, and the bottom one folded first.

It is also possible to add Velcro buttons to two flaps to support the bottom of the envelope. If the bottom flap is full size, however, that should not be necessary and may not be desirable. A score heavy enough to push out the flap might actually tear it if it is not allowed to sag (any score heavy and thick enough to push out the bottom flap entirely should be in a phase box), and the buttons add bulk and a point of stress on the score inside.

Housing for Spiral Binds

Jeffrey Trimble at the William F. Maag Library at Youngstown State University has developed an effective method for covering spiral bound scores. His technique involves making a pressboard cover (like the portfolio cover described here) with the board spine cut to the width of the spiral and then gluing the back cover of the spiral bound score to the back of the binder cover, inset from the spine by about $\frac{1}{2}$ " leaving about 1" of the score cover along the spiral unglued for added openability. An article by William Minter in the winter 1997 Archival Products newsletter describes another technique in which the spiral is sewn to the binder hinge and foam or corrugated board fillers are glued inside the covers to cure the wedge shape for shelving purposes. Trimble's and Minter's methods may be combined by gluing the filler material on the front cover and the score to the back cover. This does leave the vulnerability of the page perforation, including the possibility of the entire score tearing free of the back cover but preserves the extreme openability of the spiral bind. Openability may be the most important consideration for thin scores whose expected use will be occasional keyboard or conducting performance, or for scores for which the only alternative is double-fan library binding with perforated or very narrow inner margins. Perforated pages will probably last longer gliding over coated metal than bending along the perforation. For heavier use or where openability is not as important, especially with thinner scores, glue guarding and standard pamphlet binding is the preferable solution. In any case, it is not recommended that comb-bound scores be shelved with the plastic combs, since the plastic will certainly deteriorate to the breaking point within twenty to forty years.

Use foam core, or wrap board scraps in Tyvek or cloth



Glue this side of filler bundle to binder

glue back score cover to binder,
leaving 1" at spine unglued

Slip Case

Slip cases hold one or more items with the spine showing at the open back of the case. They are sometimes used to provide extra protection for older materials, or, commercially, to make a book appear more valuable. The most important use for music is to hold several bound parts together as a boxed set. Normally slipcases are made by library binders, but it is sometimes useful, and nearly always cheaper, to be able to make them in-house.

Materials required:

- the materials to be placed in the case
- ruler, caliper

- 0.088 or 0.098 Davey board, depending on the size and weight of the scores
- two sheets of nonstick film (waxed paper or silicon release paper or film)
- glue and weights, scotch tape
- F-grade buckram
- scissors, glue, bone folder

Measure and Cut Boards

1. Measure the height, width and depth of the group of scores to be kept in the slipcase. Add $\frac{1}{8}$ " to **H** and **S**. The resulting measurements will be referred to as **H**, **W**, and **S**.
2. Cut two small (about 1" square) scraps of the board you will use for measuring board widths (referred to below as "bw").
3. Cut board of your chosen weight into pieces of the following dimensions:
 - one piece **H** x **W**, grain running with **H**, for one side
 - one piece (**H**+2bw) x (**W**+1bw), grain running with **H**, for the other side
 - one piece **H** x (**S**+1bw), grain running with **H**, for the spine end
 - two pieces (**W**+1bw) x (**S**+1bw), grain running short, for the top and bottom

The best cutting method is to start with the **H** x **W** side, then use that piece (the piece itself, not its measurements) and the board scraps to mark the measurements for the **H**+2bw x **W**+1bw side, and cut that piece. Use the appropriate edges of the side pieces to measure the lengths of the spine pieces, and use the first spine piece cut to set the width of the other two. By using this cutting method you insure that all of the pieces fit together perfectly, since they themselves were used as measuring rods for the pieces they must fit with.

Glue Box Together

4. Lay a piece of nonstick paper larger than your side pieces on a flat work area. Lay the smaller side piece down on the nonstick paper. Set weights on the edges to hold it down flat.
5. Using a small brush, apply a bead of glue along one long side of the longest spine piece.
6. Place the piece against the spine edge of the board on the nonstick paper. Place small weights along the edge to keep it flush against the board.
7. Apply glue to the edges of the top and bottom pieces and set them in place. Place weights along the edges.
8. Apply glue to three edges of the top board and place it on top, making sure that the sides meet it evenly at the edges. Use the end of a ruler inside the box to push the sides outward, if necessary. You may wish to support the corners further with scotch tape, which will need to be removed before the cloth is added.
9. Allow the box to dry for at least one hour or overnight.

Measure and Cut Cloth

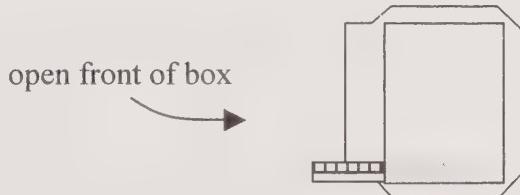
10. Measure the box in all dimensions with a ruler. (The ruler is easy to use for the spine depth since the box spine is flat.) Call these new dimensions **H**, **W**, and **S**, as usual.

11. Cut three pieces of buckram or imitation leather, of a color to match or complement the contents of the slipcase, to the following dimensions:

- two pieces ($H+1\frac{1}{4}''$) x ($W+1\frac{1}{8}''$) to cover the broad sides, grain running with **H**
- one long strip **S** wide, $H + 2W + 2''$, grain running long. (Or you may use three shorter pieces, one $H+1\frac{1}{4}''$, the other two $W+1''$ long, all **S** wide.)

12. Trim the two side pieces as shown in the diagram below. The overlap for the front flap should be 1" with straight sides, the overlap for the other three sides should be $\frac{5}{8}''$, trimmed to reduce overlap on the folds. The ruler shown in the diagram is placed inside the box, not on top. Two fine details are quite important here:

- The diagonals trimmed off at the corners should leave a little bit (at least $\frac{1}{16}''$ but no more than $\frac{1}{8}''$) of cloth showing right at each corner. These little bits will be tucked in when the cloth is glued to the box, and will keep the cardboard corners from showing.
- The straight edges of the front overlap will be tucked inside the box and should exactly cover the inside, without either sticking up around the corner or leaving cardboard uncovered at the inner corners. Therefore it is good to take care to mark and cut them exactly in line with the inside wall of the box, using the ruler set inside the box as shown.



Glue Cloth to Box

13. Apply a thin layer of glue to one of the side pieces of cloth, except for the 1" overlap, which may need to be trimmed slightly later, to fit inside the box.

Set one side of the box onto the glued piece of buckram, and press the $\frac{5}{8}''$ overlapping edges into place with the bone folder, carefully flattening the tiny overlap at each corner against the next section of overlap before folding that up in turn. Glue the other side piece into place similarly.

14. Check that the 1" front flap overlap on each side fits snugly into the box and trim if necessary (the fact that the ruler is set off from the cloth by the thickness of the board can throw off the marking in step 12 despite the greatest care). Note that there should be a little corner overlap so that no board shows at the front corner along the sides.



Apply glue to the flap and press into place.

When trimming, note that following the details closely will determine whether there is enough material to cover the inner corner of the cardboard edge without extra material bunched in that area. The dampness of the glue allows the material to be worked into the corner flat, if it is cut correctly.

15. Apply glue to the spine edges of the box, one at a time, and glue the long buckram strip to it. (Glue the box board, not the cloth strip. It makes the job much easier.)

This is best done by gluing the box bottom and setting it down at one end of the strip, leaving 1" of overlap. Make sure the box is straight along the strip.

Apply glue to the box spine and turn the box onto its back (spine down against the buckram), holding the end of the strip in place at the front overlap and pulling *slightly* to make sure the material is straight and taut, then glue the box top and turn the box again, onto its top. Make sure the material is straight and even along all three edges.

16. Trim the edges of the front overlaps by setting a ruler in the box and marking and cutting the edges of the overlaps, leaving a little bit of corner overlap as before.

Apply glue and turn the edges in, flattening them with the bone folder.

17. Allow the box to dry at least one hour or overnight before use.

Storage Enclosures

Musical scores are more likely than books to be scheduled for long-term storage, either because they have been used for preservation facsimiles and now serve as de facto master material, or because an unusual edition is preserved for scholarly interest despite having been superseded by other editions for repertory use. It may not be economically feasible to house every such score in a music library in its own new binder or phase box, but it certainly is not desirable to leave such scores in their original highly acidic housings, unless these have their own artifactual value. In the latter case, a phase box is in order. Two methods for creating light storage enclosures for material that will not circulate are given below. Neither of these is ideal, and neither can be used to house material that will circulate, even in-house, since they are both intended to prevent the item being opened casually. The paper wrapping is somewhat fragile, while *shrink-wrapping* could lead to accelerated deterioration of a score whose chemical degradation produces even small amounts of corrosive gases. However, the risk of accelerated embrittlement in a shrink-wrapping is significantly less than the risk of crushed or lost pages for a score stored unwrapped and/or unsupported, and probably less than that of further embrittlement if the old acidic cover is retained. The cost of either form of light wrapping is less than half that of any other type of custom housing.

Preparation for Wrapping

Both wrapping methods discussed below require that the material enclosed be protected with rigid boards. Gray-white board should be used for this purpose since it is buffered as well as sturdy.³ If a supply of precut 11" x 14" boards with rounded corners is kept on hand, the work flow for sheet music designated for storage can be relatively straightforward. If shrink-wrapping is used, scores can be placed between boards secured by rubber bands to wait for a suitably sized batch to build up without danger of the rubber bands digging into acid-damaged housings. The process of wrapping with paper can be done effectively item-by-item if the materials are cut in quantity, either intentionally pre-cut or in a special-purpose scrap bin. In either case, the most time-consuming part of the work flow will probably be the labeling and tracking of the items being stored. These procedures vary greatly from one library to another and will not be covered here. All paper conservation and any preservation work should, of course, be completed before the score is wrapped for long term storage. Case-bound items may either be wrapped as-is or disbound and wrapped between boards. The former is preferable if the binding is sound, despite the liability of the acidic cover compared to new buffered boards,

since disbinding will cause its own damage and open the way for loss of pages if the package is opened. If the original binding is soft or fragile, however, the added protection of new boards is desirable.

Shrink-Wrapping

It is important to avoid poor-quality plastic sheeting, as some types of plastic will themselves deteriorate more rapidly than paper. The advantage of shrink-wrap over paper wrapping is the greater sturdiness of the finished package. Shrink-wrap is often used for transporting large numbers of books and scores with fragile page attachments, such as when collections are moved from one building to another.

Materials required:

- scores ready to be shrink-wrapped (attached to rigid boards, all labels in place, etc.)
- metal library cart (other low work surface may be used)
- shrink-wrap heat control and wand, heat pads, shrink-wrap roll⁴
- awl, pen
- heat gun

1. Set up the shrink-wrapping workstation as directed in its instructions. It will probably include one or more layers of protective padding, the heat application wand, a heat control with electrical transformer, and a roll of shrink-wrap plastic.
2. All scores should have been prepared by removing pamphlets from old acidic binders and placing them between acid-free sheets of sturdy board with rounded corners. They may be secured with rubber bands while waiting to be wrapped, since the boards will protect the contents from damage. Make sure that all scores have any necessary bar codes and call numbers firmly attached to the outer covers, and no extraneous materials are inside.
3. Place the scores to be shrink wrapped on the top shelf of a metal book cart, or other low work surface convenient to the shrink-wrapping workstation.
4. Pull a section of shrink-wrap plastic over the protective pad. The plastic should be in a double layer, with a fold at the top and the bottom open.
5. If the outer edge of the section of plastic is unsealed, seal it perpendicular to the fold with the heat wand. This action should probably include placing the heat wand in place, activating it, and pulling the plastic away from the new seal as soon as the completion of the seal is indicated, while the wand is still in place and the plastic still melted.
6. Slide the first score to be shrink-wrapped into the corner thus formed, first removing the rubber band if there is one.
7. Double check that all necessary labels are visible on the outside of the score. Snug it (but not too tightly) into the previously sealed corner of the section of plastic.
8. Place the wand in a vertical position along the unsealed side of the score, snug but not too tight. Make sure the heating surface of the wand is tight against the pad, the plastic beneath it is not wrinkled or twisted, and the electrical cord is not touching the heating surface.

9. Activate the wand as directed in the equipment instructions. Pull the excess plastic away from the new seal at once, while the wand is still in place and the plastic still melted.
10. Move the wand to a horizontal position along the bottom of the score and seal that end. Once again, hold the wand snugly but not too tightly against the score, activate the heating element, and pull the plastic away at once when the seal completion signal occurs.
11. The score should now be sealed in a plastic bag. Set it aside.
12. Repeat steps 6-11 for all the scores on the cart.
13. Once all the scores are sealed, make pinholes (at least one is necessary to allow the wrapper to shrink, but more may be made for extra ventilation) in the wrapping of each one with an awl, setting them back on the top of the cart as you do so, in two piles of even height (unless there are only a few).
14. Plug in the heat gun and turn it all the way on, positioning yourself comfortably in front of the cart.

Note that the heat gun can be dangerous if used carelessly! It blows much hotter than a hair dryer. If you get tired of holding the weight, set it to the cool setting (the switch pointed to the middle) and set it down on a flat surface, being careful that it is not pointed at any nearby object.

15. Within a few seconds after it is turned to the heat setting, the gun will have heated to working temperature. Direct it to blow on the top score on one pile.

Always keep the gun moving, so that it is not pointed at the same place for more than an instant. Otherwise it will burn a hole in the plastic (and eventually the score).

When the plastic on the first score is slightly shrunken and puckered but not yet fully tight, move the gun to the top score on the other pile.

16. When the plastic on the second score is slightly shrunken and puckered, turn both scores over.

You may either hold the gun in one hand and turn the scores with the other, or put the gun down. Make sure that it is pointing away from any nearby objects, or yourself.

17. Shrink the plastic on the back side of each score with the gun until it is tight and smooth.

Turn the scores over again.

18. Shrink the first side again until it is tight and smooth, including at the corners.

19. Set the top two scores aside and continue with the next two as before.

20. When all the scores are finished, let the gun blow cold for at least sixty seconds. Always let the machine blow cold (switch on the middle setting) for a full minute before turning it off; otherwise the residual heat will damage the gun.

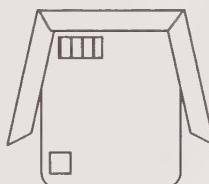
Paper Wrapping for Storage

A simpler though less sturdy option for housing fragile scores for storage is to use paper rather than plastic to contain the material between the boards. This method provides less protection against dust and pollution but does prevent scores stored in optimal conditions against the risk of accelerated deterioration due to trapped gases. It is also inexpensive and very quick and can easily be applied to scores one at a time, as part of a standard work flow. The simplest wrapping method is simply to “gift wrap” each score in a large sheet of acid-free paper, but this will require placing labels and bar codes on the outside, where they will easily be lost if the score is unwrapped. The procedure below (which may be modified as needed depending on the placement of labels), uses pamphlet binding scraps for wrapping, with a strip over the top included for dust protection.

Materials required:

- score(s) ready to be wrapped (attached to rigid boards, etc.)
- paper strips 3"- 6" wide and 25"- 30" long (grain does not matter; shorter strips can be taped together)
- scissors and tape (archival tape with some guarantee of longevity is recommended for this method)

1. Remove any extraneous materials (rubber bands, etc.) from the score and make sure that all labels are visible on the outside. One may also choose to add the labels after the wrapping is in place, but this introduces the risk of mislabeling and loss of the labels if the score is unwrapped.
2. Lay a strip of paper over the top of the score, creasing it down the center first for a pamphlet score, and making sure (by recreasing, cutting out a section, etc.) that it does not obscure any labels or bar codes. Bend it around the corners of the board and tuck the corner folds toward the spine of the book. Do not worry about the fact that it does not stay in place.



3. Take a second strip, the widest that will fit without obscuring information, and wrap it around the score vertically (top to bottom, holding the dust strip in place at the top of the score), securing it with tape near the center of the score.
4. Wrap a third strip around the score horizontally. Tape it over the seam in the vertical tape. The score is now ready to shelve with care for long-term storage.

Notes

1. Margaret R. Brown and Don Etherington, *Boxes for the Protection of Rare Books: Their Design & Construction*, Washington, DC: Superintendent of Documents, 1982.

2. The design given here was developed by Dr. Sion Honea for use at Sibley Library. Another design that will be worth trying is described by Per Culhed, “The 5-Minute Phase Box,” *International Preservation News*, No. 22-23 (August-December 2000): 26-29. It is a little lighter than the version described here. Other versions involve the use of rigid board bound and hinged with cloth, like the pocket cases described in chapter 3, but these often depend on cloth ties or velcro to keep the box closed.

3. A recommended board for this particular purpose is Hollinger's grey-white board, cat. no. 11010, in 34"x27.75" sheets. These can be cut down into six sheets of approximately 11"x14" with almost no waste. The standard size cuts preparation time and makes shelving easier and safer. Note, however, that the board, which is unusually inexpensive, is not very rigid and is therefore not recommended for pamphlet binders.

4. The type of wrapping setup with a separate wand will be required for wrapping bundles the size of most scores.

Conservation Techniques and Procedures

Every library must set its own policies regarding repair and replacement of materials, and there are many options and variables. For instance, music library staff may give high priority to the erasing of pencil marks in music because they believe patrons will be less likely to vandalize unmarked music, and because they wish to provide students with scores that are comparable to what they might purchase. On the other hand, removal of markings may equally well be given a low priority under stress of finances or the consideration that some patrons will mark their music in any case, regardless of its obvious value or pristine condition. Markings that can be ascribed to a particular studio teacher may even have value in themselves. Other conservation-related questions and options include the types of work statistics to be kept, what kinds of in-house conservation are actually available, who will make treatment decisions, and the amount and type of documentation used in that process, deacidification policies and options and what level of deterioration, acidic or otherwise, may be considered "permissible" for low-use items to be returned to the shelf untreated. The higher level of sturdiness required by music materials used for practice or performance must be taken into account here; the same library may have very different standards regarding permissible fragility for books than for scores, since the scores are more likely to lose brittle pages while in use.

The treatment selection sequence suggested on the following page considers options both of *conservation* (action taken to repair a copy of a score) and *preservation* (action taken to replace a score that cannot be repaired).¹ The sturdiness and openability requirements peculiar to music tend to leave a rather wide middle area where either type of treatment may be indicated, depending on cost and usage. In this chapter the conservation options will be discussed in detail. Libraries that send materials to a central library conservation department may nonetheless find the descriptions here useful, since some procedures specific to music may be passed on to general conservation staff or can be carried out by music library staff or student workers with relatively little space or equipment.

Treatment Selection Work Flow

The following sequence of considerations for conservation or preservation treatment was developed for use in a large academic music library. It can be taken as an example for other collections but will need to be adapted to the particular mission and treatment capabilities of each library.

Bases for repair/nonrepair decision

- Paper strength, measured by the “double-fold test”: fold a small corner over, then back against the same crease. If the corner falls off, the book is too brittle to repair. If the corner cannot be pulled off easily after being subjected to a second double fold, the item can be resewn safely by a library binder without a great likelihood of extra charges for hand conservation.
- Binding type: signature bindings can usually be repaired or replaced if the paper is sound; oversewn or adhesive bindings usually cannot be replaced (new adhesive binding rarely works with older paper, oversewing is not suitable for music scores).
- Serious mutilation (markings, tape, missing parts, or other material)

Repair options (assuming paper passes double-fold test, binding is repairable, etc., from above):

- Tip-in, redo labels or other “casual repair” of some small problem
- New pamphlet binding (pamphlet in worn, damaged or acidic binder)
- Paper conservation, with or without new binding
- Spine replacement (hinges sound, spine cover loose)
- New library binding (signature score with bad hinges, sturdy paper)
- In-house rebinding of older scores (signatures, bad hinges, older paper)
- Deacidification (bibliographic or artifactual value, acidic, not brittle)

Bases for replacement decision (for scores that cannot be repaired):

- Centrality of item to library mission
- Number and condition of other copies and editions
- Amount and type of expected use

Replacement options:

- Replace/discard, if an identical copy is still in print or library policy does not support storage
- Replace/storage, if another edition is in print
- Duplicate/storage (photocopy or other format) if the item is out of print
- Duplicate/discard in special cases (e.g., mold, poorly formatted new materials)

Non-replacement options:

- Discard, if there are sufficient other good copies, or item is distant to mission
- Move to storage, if little use is expected (e.g., other good editions available, but copy has scholarly value)
- Return to shelf or move to restricted circulation, with or without rehousing, if item is stable, little use is expected
- Rehouse, move to rare book area if item is rare or otherwise exceptionally interesting or valuable

Paper Conservation

Erasure

Make sure new library assistants know before they begin that certain pencil marks, including call numbers, acquisitions information and other gutter markings, and any other local library markings, should *not* be erased from library books! This may be invisibly obvious to library staff, but unrecognizable to new employees. It is also wise to teach new employees to look out for markings in sloppy blue pencil and any others that seem unusual, inexplicable, or interesting, and to ask before removing them. With music, you never know—proof copies can show up in the strangest places, and some libraries may wish to preserve marks of certain kinds or made by certain patrons. All other pencil markings are usually fair game. Each patron should have the opportunity to come to his or her own conclusions about articulation, tempi, etc., developing their own musicianship. Even corrections of printing errors may be removed with a free conscience as long as this is consistent with library and school policies; if one musician noticed it, the next will as well, and the library may feel obligated to present patrons with material as first published.

Materials required:

- score to be erased
- eraser gum or *electric eraser* machine
- brush, dustpan

To use a gum eraser:

Hold the eraser in either hand and move it gently over the marks to be removed, always being careful to erase in one direction only, and always toward the edge of the page. Normal “back and forth” motion, or motion that catches the edge of a page in any way, can damage fragile paper unnecessarily. A gum eraser is useful for very small jobs but, for nearly any marked music, an electric eraser machine will save a great deal of time. Also, a small gum eraser can lead to the same types of repetitive motion injuries as a larger machine eraser, so take note of the caution below.

To use an electric eraser machine:

Hold the machine in any manner that is comfortable and press the button when the tip is in contact with the undesired markings. *Be careful to change positions and take breaks frequently, and do not plan to erase for long periods of time (no more than an hour, with two or three breaks). Because the motion is repetitive and involves clutching an object (no matter how you hold it) and pressing down, it can lead to tendonitis even in a single (long) session if these precautions are not taken.* Musicians are both more prone to repetitive motion injuries, since such motions are already part of their daily routine and also more seriously affected by injury, insofar as an extended rest from practice can completely disrupt their musical activities.

Resist using more motion than is necessary to cover the area being erased, since that wastes time and erasers. Brush away the erasings with an eraser brush before turning to the next opening. The long, thin eraser core must usually be pulled out as it wears by pushing back the plastic ring that holds the nose of the eraser machine tightly around it. Pull the core out so that about $\frac{1}{4}$ " is showing, then pull the plastic ring back out to the end so that the core is held tightly again. Replace the cores in the same manner.

It is sometimes possible to erase pen marks without completely destroying the paper underneath, but this is not normally worth the time required. Should anyone wish to try, there are eraser cores developed for the purpose. These are harder and/or grittier and come in a variety of colors and textures. Pen marks can be covered over for purposes of preservation photocopying with white-out type paints and papers.

Solvent Cleaning

Solvents are used to remove solvent-based adhesive tape that covers text. Tape of any sort that does not obscure print should be removed simply by pulling it away dry, except cloth tape over brittle paper that you particularly wish to conserve; see aqueous cleaning below. The cleaning method given below is sufficiently time consuming and likely to damage brittle paper that it is not worth employing except to save actual information. “Clear” tape of any great age will have turned yellow or brown and will stain the paper below it. The tape can be removed, but the stains are there forever.

Different solvents affect different components of tape material:

- Toluene dissolves the glue that sticks “magic” (i.e., most newer tape) and older cellophane tapes to paper. This is the most useful solvent, and the one to get if you only want to keep one.
- Xylenes dissolves cellophane tape, but not the glue, and not “magic” tape.
- Acetone dissolves nearly anything, including many inks. It is not recommended for use with library scores.

All of these solvents are now classified as hazardous materials and should be used, if at all, with a fume hood or other respiratory protection, by people trained in the use of the protective devices. The following procedures are strongly recommended when using any solvents or other volatile chemicals.

- Wear plastic gloves and face masks or (with proper training) respirators. Use a fume hood if available. Intense or long-term exposure to toluene (much more than that used for these purposes) can damage the nervous and renal systems.
- Store solvents in the correctly labeled bottles in which they were purchased.
- Find out your institution’s policy on purchase, storage, and disposal of small amounts of solvents.
- When a solvent is needed, pour a small amount (approximately what will be needed) into a small bottle and use the small bottle for wetting a cotton ball or swab to minimize the danger of spilling a large amount.
- Dispose of the unused solvent according to local policy or by flushing down the sink with running water. Do not return the unused solvent to the storage container, since it will have become contaminated during use.
- The small bottle may be rinsed after use but should not need special cleaning. Solvents are more volatile than water, and any remaining in the bottle will evaporate; the rinsing simply allows more of that to happen in the institutional sewers rather than in the library air.
- Avoid doing a great deal of solvent cleaning at one time, especially if the work area does not have a fume hood.
- Use an old sheet of blotting paper as an extra protection for the work table, as well as the usual sheet of scrap paper.

Removal of Tape from One Side of a Page (Solvent Only)

Materials required:

- the work area prepared as described above and the page(s) you are working with
- a few milliliters of toluene in a small glass container
- a flat petrie dish (ideal) or other glass jar
- an x-acto knife with a no. 11 or no. 24 blade
- a few cotton balls, cotton swab

1. Paint a line of toluene with the swab around the edge of the tape, to show where it is on the other side of the paper.
2. Turn the page over and apply toluene liberally with the swab within the marked area, so that the paper behind the tape is soaked with toluene.
3. Turn the page over again, place the extra jar or petrie dish over the treated area (to keep the toluene from evaporating too quickly), and wait one to two minutes for the solvent to soak through the paper and dissolve the glue.
4. Peel the tape away with the x-acto knife. The more glue that comes away with the tape the better, but do not *try* to remove glue at this point; that is easier to do when the tape is gone.
5. Once the tape is removed, swab a little bit of toluene directly on the remaining glue.
6. Remove most of the glue with the x-acto knife, holding the blade nearly perpendicular to the page, scraping the softened glue gently together and scooping it up with the blade, wiping the blade periodically with the paper towel. Work as neatly as possible so as not to spread glue onto areas not previously affected. Note whether the print seems to be affected by the solvent. It normally is not but occasionally you will find that it scrapes away with the glue. If so, exercise special care.
7. Once most of the glue is scraped off, if the print is not affected by the toluene, apply a little more and use a cotton ball to remove the last of the glue, rubbing until the surface feels smooth.

If the print does seem to be smearable, use your best judgment. The best results are usually obtained by using the knife to scrape glue gently from over the print, finishing with the cotton ball in unprinted areas. It will probably smear some no matter what you do, once the solvent is applied.

Removal of Tape with Heat Tool

When tape has been applied to both sides of a page, using solvents alone to remove it will be messy if it can be done at all. Old cellophane tape can often be pulled away from its glue, leaving the print underneath undamaged. Failing this, it can be dissolved with xylenes applied directly to the tape, after which the glue can be dissolved with toluene and scraped away using the method described above. Xylenes will not dissolve newer clear tape, however, and the toluene will not work unless it can somehow get through to the glue. The best method for removing new tape in this situation is with heat, using a spatulate tool specifically designed for the purpose and distributed by Gaylord and University Products (indexed under "Tape Removal"). Some people prefer to use the *heat tool* for all tape removal, since it is neater and requires less solvent. You must still use solvent to remove the remaining glue in any case.

Materials required:

- the work area and materials prepared as for solvent tape removal
- the page(s) you are working with
- the heat tool

1. Set up as for solvent cleaning but also have ready the Heat Tool. Plug the transformer into an outlet convenient to the solvent work area and plug the heat tool into the transformer. Set the transformer about halfway between “dec.” and “inc.” on the dial and adjust it if needed.
2. Allow the tool to warm up for a few minutes, then begin to use the sharp end to push back the tape very slowly. Once there is enough tape loose to take hold of with your fingers, it may help to hold it up so that the edge of the tool is always right at the point where it can best melt the glue between the tape and the paper (the heat tool will not melt the tape itself). Do not try to pull the tape back with your fingers, however, and do not try to hurry the process. It is all too easy to pull the tape and glue away from the paper, taking the print with it.
3. When all the tape is free, proceed as above to remove the rest of the glue with toluene.
4. Once the paper is thoroughly wet with toluene on the first side, it should be possible to remove the tape from the other side, after which you can go on to remove the glue from that side as well.

Aqueous Cleaning

Music that arrives with single central pages often ends up taped together at the spine, and older pamphlet binds often use tape to attach the score to the binder. Cloth tape, like clear tape, is normally removed by pulling it off dry, but in cases where the tape obscures print it may be removed by soaking it in water. This method may also be used to prevent further damage to brittle paper, though in most music library applications the result is not worth the effort.

If water is applied to only one area of old paper, it will dissolve the brown-colored chemicals produced by the degradation of the paper and redistribute them to the edges of the wet area, causing a “water stain.” The way to avoid water staining and clean the paper at the same time is to wet the entire item at once. In cases of very discolored old papers, aqueous cleaning can thus be used on its own account to make the print easier to read or duplicate, even if there is no tape to be removed. While it is wet, paper is extremely vulnerable, being both weak and heavy, but once it dries it will actually be somewhat stronger than before, since the action of swelling and shrinking helps the fibers re-adhere better to one another, so that soaking in and of itself is beneficial to older papers.

Use filtered water when soaking paper, to avoid adding new contaminants while removing the old ones. If the library does not have water filtration available, use purchased water, preferably “distilled” or “micro-filtered.” “Pure natural spring water” may in fact also be acceptable, since the spring water is usually either filtered or chosen for purity, and the minerals that it contains are likely to be supportive to the paper. However, since “spring water” will vary considerably from one source to another, do not choose it without research. In a pinch, for materials that will never be considered rare or valuable, use tap water. This is not recommended, but for removing tape in order to rebind a Beethoven sonata for one last time, it certainly will not be the factor that ends its life!

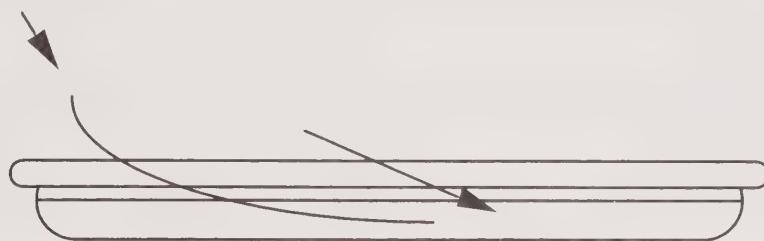
The ideal work area for aqueous cleaning of music as described below will include a large (at least 2' x 4') sink with filtered water available, a large (at least 3' x 4') flat table top, and one or two large pieces of heavy shelving board, about 2' x 3'. A small sink with a counter big enough to accommodate the largest washing tray can substitute for the large sink, and the heavy shelving can be used as the large flat space on a table or even

the floor if need be. In that case, two pieces of shelving will definitely be required. Using floor space will be the least ideal solution, since the paper will need to dry overnight.

Materials required:

- a plastic tray, large enough to accommodate a full page or bifolio laid out flat, set over or in a large sink if possible, otherwise on a stable surface
- four pieces of blotting paper for each page to be cleaned (for this, use clean *blotter paper* larger than the page), and a flat surface large enough to accommodate at least one sheet of the blotting paper
- a wooden-framed fiberglass *screen* at least 20"-30",² set over the sink (or another flat surface)
- unframed fiberglass screening (if the paper is very brittle or damaged)
- flat brush 1"-3" wide
- other work to do, since you will have to wait for the paper to soak

1. Fill the tray with filtered water to a depth of at least $\frac{3}{4}$ ".
2. Slide the item to be cleaned into the water, starting with one end and gradually sliding in the rest, so that you are not in the position of pushing dry brittle paper under the water from above.



If the paper is very brittle or damaged, place the unframed screen in the tray first, pushing it down into the corners and smoothing out wrinkles so that the paper can lie flat in the bottom of the tray, on a smooth surface of screen.

Do not put the paper in the tray first and then add the water. While it is wet, the paper is especially soft and weak; it is possible for the pressure of the water to make holes in it.

3. Let the paper soak for thirty minutes before checking it. If you are in a hurry, you may try lifting the tape gently after as little as fifteen minutes, to see if it is on the point of floating off. There is always a danger that it will lift the print, however.
4. After thirty minutes, look to see if the tape is floating free. If it is not, wait another fifteen minutes. Unless there are other people wishing to use the tray, you may leave paper there overnight; the water will not hurt it.
5. Once the tape floats free, pull it out of the water to get it out of your way. There will still be half-dissolved glue adhering to the paper.
6. With the paper still submerged, use a wide, flat brush to brush the glue away as gently as possible. Keep brushing until the paper surface no longer feels slimy.
7. If there is tape on the other side of the sheet, gently raise it from the water using the technique described in step 9, and return it to the bath with the other side up. Because it is already saturated with water, it will

be easier to slide it under than it was the first time. If screen was used, raise the paper and screen as in step 11, set them on a flat surface (paper side up) and submerge another sheet of screen in the tub before returning the sheet to the bath (old screen now on top). Remove the first piece of screen when the paper is fully submerged.

8. If you did not use a screen in the bottom of the cleaning tray, have one sheet of blotter paper ready on a nearby flat sturdy surface, the other near at hand. If you did use screening, go to step 11.
9. Take the paper gently by two corners and raise it gently out of the water. Note again that at this point the paper is both weak and heavy, being full of water. Be very gentle. If folio tears down the middle despite your care, you can simply guard it later.
10. Lay the paper flat on the piece of blotter paper, cover it with the other piece. Go to step 15.
11. If you have used screen in the bottom of the tray, pick up one end of the screen by two corners and gently raise it from the water, taking the paper with it.
12. Lay the screen with the paper on the framed screen over the sink (or other surface). Lay a piece of blotter paper on top.
13. Pull up one end of the screen and blotter paper together to turn all three layers gently over together onto a sturdy flat surface, so that the wet paper is lying on top of the blotter paper, with the screen on top of that.
14. Gently remove the screen and replace it with the second piece of blotter paper.
15. Gently pat and press the blotter "sandwich" to blot up as much water as possible.
16. Remove the top piece of blotter paper, carefully move the paper you are cleaning onto the screen over the sink, and allow it to dry there.
17. The paper will curl and cockle if it dries completely on the screen. If you wish it to dry flat, allow it to dry partially on the screen, then set it between two dry sheets of blotter paper (new ones, that is, not the ones used in step 14) and dry it overnight under a piece of heavy shelf board, or between two pieces. If the paper dries completely and cockles, it can be relaxed with a spray of fine water mist (on one side is enough) and then dried with blotter paper under weight.

Variation: Soaking Multiple Sheets

Where space, time or water are at a premium, it is possible to soak multiple sheets of paper in the same bath by separating them with sheets of unframed fiberglass screen. Rather than trying to slide the upper layers of paper along the screen, it will work better to settle one edge into the water in place, then gradually submerge the rest of the sheet, pressing it into the water gently as you go to make sure there is no trapped air. Then add the next piece of screen, etc. The whole mass may be weighted down with a smaller tub. Because only the top sheet can be tested, it is best to let the paper soak for at least one hour before attempting to remove tape.



Tear Repairs with Tape

While a variety of tapes and procedures may be used for guarding new paper into signatures, the special requirements of paper repair reduce the number of appropriate options. Standard paper and glue are not recommended for repair of older papers because the repair may be too strong and create stress on the older paper that will lead to further damage at the edges of the repair. Document repair tape and its glue are lighter and unlikely to cause this problem. It can be applied with ease, but this very ease and the fact that the tape sticks on contact can lead to problems with repairing tears where the bevel of the tear shifts along its course.³ Heat-set tissue and *Japanese paper* and paste give greater control over the repair process and can be cut to odd sizes for complicated tears. They also demand enough attention and preparation as to discourage sloppy matching of the torn edges, and they look so unlike Scotch tape that they will not encourage library patrons to repair accidental tears themselves. One situation in which document repair tape is to be preferred over heat-set tissue or Japanese paper, however, is repairs to material that is to be photocopied for preservation, where the most transparent type of document repair tape will be the best option.

Heat-Set Tissue Repairs

Note that not all heat-set tissues are created equal. While this fact is most crucial when guarding sheets into signatures for sewing, it is worth noting here as well. Here, the efficacy of the glue is less of an issue, while paper tissue is to be preferred over nylon web, since the repair material should not be much stronger than the material being repaired.

Have ready:

- two sheets of silicon release paper
- heat-set repair paper roll
- a tacking iron with the thermostat set between "medium" and "high"

1. Cut as many strips as you will need, $\frac{1}{2}$ " wide and about an inch longer than the tear(s) to be repaired, or a little longer than each straight section of a long, complicated tear. For lightly curved tears, or those with a short sharp curve, cut a wider piece of tissue rather than using several pieces.
2. Lay one of the sheets of silicon release paper on your work area to protect the table beneath from getting heat-set tissue glued to it. Set the page to be repaired on the paper.
3. Carefully set together the edges that you wish to repair, making sure that any noticeably beveled edges of the tear are laid together all along the length of the tear, noting that the direction of the bevel is likely to shift abruptly. This is easier to see than to draw or describe; just make sure that the outside surface of the paper is exposed all along the tear, so that all print is visible. If the tear is a large one, you may wish to use weights to hold the paper(s) in place.
4. Place a strip over the area to be repaired. If the tear does not completely separate the torn page, start at the inner end of the tear. Otherwise start at one edge of the page, and let the repair paper overlap the edge by a little bit. You may tack it into place if you wish by tapping it lightly with the iron at both ends.
5. Place the other piece of silicon release paper over the repair strip, to prevent the iron from sticking, and so that bits of burnt material on the iron do not stick around your repair.
6. Iron the strip into place, starting from the inner end of the tear. This will probably take several passes with the iron. As discussed in chapter 1, the best motion to use for ironing combines slow overall progress with small motions to relieve muscle tension.

7. If other strips are needed, place them and iron them. Do not overlap the edges, as with Japanese paper, but the edge of the repair tissue should overlap the outer edge of the page being repaired.
8. When the repair is complete, trim the edges as needed.

Japanese Paper Repair

For repairs to rare or other special materials, or for people who are tired of guarding with heat strips, an alternative repair method is to use Japanese paper strips applied with glue or wheat paste. Different types of repair paper will be preferred for different types of repair, and by different people. Kizukishi, the finest and thinnest paper commonly used, will give the most translucent result and will place little stress on the paper around the repair. However, it is very delicate and many people find it difficult to work with. Sekishu is a little heavier, easier to work with, and will provide greater support for repairs to sturdy pages that will continue to receive heavy use. It is less translucent, however; if the tear involves print that must not be obscured, heat-set tissue may be the best option. As for glue, wheat paste is strong, stable, and reversible in water, making it the suggested material for repairs to rare or otherwise valuable materials. However, it is time consuming to prepare and cannot be stored for long at room temperature, being prone to mold. PVA glue is perfectly acceptable for most library repairs. For repairs to very delicate papers, *methyl cellulose* may work best. It is a very weak glue that will cause the least stress to the material being glued, but it is too weak for most applications. To prepare wheat paste, follow the directions on the packet, or use a microwave oven to heat the paste intermittently. Stir until the consistency of the paste is satisfactory to you (perhaps ten minutes, having brought the water to a boil with about two minutes of heating, then reheating for thirty seconds every few minutes thereafter). For valuable materials, use the packet directions.

Materials required:

- a sheet of glass or heavy plastic on a work table
 - item to be repaired
 - Sekishu, kizukishi, or other repair paper, blotter paper, waxed paper
 - PVA glue or wheat paste, glue brush
 - cotton swab, filtered water
 - tweezers, spatula, or bone folder, if desired
1. Arrange the item to be repaired on the flat glass or plastic work surface with the torn edges laid together, making sure that any noticeably beveled edges of the tear are laid together all along the length of the tear, noting that the direction of the bevel is likely to shift abruptly. This is easier to see than to illustrate or describe; just make sure that the outside surface of the paper is exposed all along the tear, so that all print is visible. If the tear is a large one, you may wish to use weights to hold the paper(s) in place.
 2. Use the cotton swab to draw a line of water along one edge of a piece of repair tissue, marking off a straight length of the tissue about $\frac{1}{2}$ " wide. Pull the piece off gently along the wet line, so that the newly torn edge is feathered. If the other long edge needs to be feathered, do it the same way.
 3. Tear the $\frac{1}{2}$ " strip into lengths appropriate to the tear and the paper you are dealing with. If the tear is long and straight, the page to be repaired is heavy in weight, and the repair tissue is thin, you may use lengths up to 4" or even more without much likelihood of the repair paper shrinking and either separating or cockling the repaired sheet as it dries. However, if the paper being repaired is thin, the repair pieces should be shorter, 1-2".

4. Apply a thin layer of paste or glue to one piece of repair paper at a time, using the glass or plastic surface, rather than scrap paper, as a back surface so that the wet and sticky repair piece will be easier to pick up.
5. Use a pair of tweezers to pick up the gluey repair paper and place it, glue side down, at one end of the tear to be repaired. If the tear does not completely separate the torn page, start at the inner end of the tear. Otherwise start at one edge of the page, and let the repair paper overlap the edge by a little bit.
6. Use the spatula (or a bone folder, your finger, or your thumbnail) to press the repair paper into place and squeeze out any excess glue.
7. Apply glue to another piece of repair paper and add it over the tear, overlapping feathered edges with the first piece. Continue until the tear is covered and a little bit of the repair paper overlaps the edge of the paper being repaired.
8. Allow the repaired page to dry for half an hour. If convenient, you may place the paper under a weight or in a *book press*, protected on the wet side by blotter paper and on the glued side by waxed paper.
9. When the glue is dry the ends may be trimmed as needed at the edges of the paper being repaired.

Rebinding Pamphlets

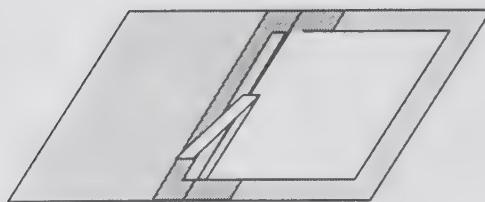
Replacing worn pamphlet covers, with its associated page repair, is a good introduction to conservation procedures for new assistants or student workers, since the result is usually satisfying, assuming the paper of the pamphlet is sound and all of the repairs are carried out. Although each individual item will, of course, have particular injuries, there is a process to identifying and addressing them, and this will be presented in the usual step-by-step formula below.

Materials required:

- pamphlet to be rebound
- scissors, binding knife
- materials for specific repairs as needed
- materials for new pamphlet bind

1. Remove any parts from their pocket and remove the staples or cut the sewing threads of the parts (their covers should be replaced if acidic, even if they are undamaged) and the score with scissors.
2. Pull the music free of its covers. If the score was not glued into the old cover, proceed to step 5.
3. If the score was glued directly into the binder, pull the old binding tape free of the score cover on each side, keeping the music flat with one hand and pulling the old tape off at a sharp angle so as to rip it along the center seam. This should minimize the damage to the score cover but will probably leave a scab of glue along the spine. See illustration next page.

If the tape gluing the score into the binder covers print that must be retained, cut along the seam of the center-sewn tape, remove the score from the binder and the score contents from the cover and proceed with the aqueous cleaning procedure described earlier in this chapter.



4. The old glue will need to be removed if the cover is to be retained, since the center crease must almost certainly be guarded, and the old glue will interfere with that process. It can either be soaked off (see aqueous cleaning below) or scraped off with a binding knife. The latter method will probably result in the loss of the outer layer of paper, but is a lot faster since there is neither soaking nor drying time involved. Because the crease is to be guarded anyway, the abrasion of the paper surface is not a cause for concern.
5. Use a similar technique to remove any other cloth tape from the score and parts. (Cloth tape was once routinely used to reinforce the inner folios of new scores during binding—a practice that is no longer recommended!) Also remove tattle tapes, if need be, this way. Do not worry much about damage to the paper, since you will be doing repairs and reinforcement in subsequent steps.
6. Carry out any other repairs indicated: erasing, solvent cleaning, aqueous cleaning, and tear repair, in the order listed. Erasing is first because solvent and aqueous cleaning may bind pencil markings more permanently into the paper fibers; tear repairs come last since they would be undone by those procedures (and might cover up markings to be erased).
7. When other repairs are complete, separate the folios and examine the center fold of each, holding it up to the light. If the center fold area is significantly more translucent than the rest of the paper, the fold should be reinforced—though not with cloth tape.
8. Use a good quality lightweight paper archival tape, either pressure sensitive document repair tape or heat-set tissue, to guard the outside of any folio that needs it, following the directions for guarding above. The paper and glue method described for guarding new folios in chapter 2 is not recommended here, since the paper and glue combination tends to be less flexible than commercial adhesive tapes and may cause older paper to bend and break along the edge of the reinforcement.
9. Reassemble the score and any parts into the original order and sew into a cover sheet (this is strongly advised for repairs, and staples are strongly discouraged, because the older paper is presumably acid-damaged and less sturdy than new nonacidic paper) or directly into a new binder.
10. Finish the pamphlet bind as usual.

Tipping in Pages

Scores are often bound in signatures and also receive heavier use than books. Therefore, it may be better to disbind the entire item and restore the signature when a page is loose. However, even for music this is not always feasible, and, in many cases, tipping in a loose page will extend the life of an item for which rebinding is not appropriate. One standard method, which involves adding glue to the loose page by the stencil method used for glue guarding, is not recommended for music because it prevents the tipped page from opening fully on one side. The next person to use the score will try to open the page fully and then run their thumb down the “accidentally glued together” line at the spine. Then the score will be returned to the bindery again to have the same page retipped.

A better method for scores is to brush a tiny amount of glue all along the spine edge with a small or flat brush. Too much glue will lead to the same thumb-down-the-spine result; it only takes a very tiny amount to hold the page in place. There is no single trick for reinserting the page into place in the text block, but it does take practice and some skill to push the spine edge of the page directly into its slot without depositing glue on either side. It may help in some cases to lay a sheet of waxed paper on one side as a shield. Be sure to hold the tipped page taut during the process, and it may help to hold the book open with weights. If some glue does brush off in the spine area, scrape it away with a fingernail before closing the book. If you have used the right amount of glue, there will not be much to scrape. This method can be used, if need be, to tip in several adjacent pages.

Two other tipping methods are also useful to consider. One involves creasing a tiny hinge, about $\frac{1}{8}$ ", along the spine edge of the page to be tipped, and applying the glue to the hinge. This method also avoids the stuck page syndrome and works well as long as the hinge is thoroughly flattened and tightly glued. Note that, if the hinged edge is jammed as closely as possible into the spine area, it will have the negative effects both of adding bulk right at the spine and of leaving the outer edge of the page a little short of the rest of the pages. Therefore, it is good to insert the page very close to the spine but not necessary to force it as close as it will go. The other method is for pages that have not torn cleanly at the spine but have, instead, left a small fringe of paper attached to the book block. In this situation one may consider adapting the "stencil" method of tipping. Apply a slightly wider strip of glue (say, $\frac{1}{16}$ ") to one side only of the torn edge (rather than a tiny bead right along the edge itself), then reinsert the page slightly inset, so that the outer edge of the page is about $\frac{1}{16}$ " inset from the pages around it and the torn edges are glued together along a thin overlap. If this method is chosen, it is best to place waxed paper on either side of the inserted sheet while the glue is drying. The glue may be applied either freehand or using a piece of scrap to protect the rest of the sheet, as in the stencil version. For this latter method it is important *not* to trim either torn edge.

Binding Repair

For most newer scores with damaged bindings—detached spines, loose covers, loose signatures—the most cost-effective repair will usually be library rebinding, which will cost seven to fourteen dollars per score. The cost will depend both on the bindery contract and whether the original sewing is preserved, which is often preferable but more expensive.⁴ However, certain types of binding repair can be done in-house, and a trained student can carry out a typical spine replacement in about thirty minutes, or a full recase in about two to three hours. For scores or books that are older, this may be the best solution, since there is less danger either of the score being accidentally damaged further by a machine process or routed for commercial conservation at a labor cost of sixty dollars per hour. This type of repair also offers an interesting challenge to students who enjoy working with their hands, and may be an incentive to stay in the bindery once they are fully trained and other processes begin to seem tedious.

Two types of binding conservation are presented in this manual, spine replacement and recasing; the latter involves removing the old cover entirely and doing repairs as needed to the original sewing of the text block. Note that it does require a board cutter, unless the original boards are in good enough condition to be reused. An older score whose sewn binding is fairly intact does not necessarily need to be rebound. If the cover is still firmly attached at the hinges and only the outer spine cloth is falling off, only that outer spine covering need be replaced. Clean the spine as shown below, and then reassess the situation. If the hinges holding the cover in place are seriously damaged but the spine sewing is still intact, the spine cannot be replaced in-house but the score can be recased, either in-house with the directions here or by a library binder.⁵ If, once the glue is removed from the spine, it becomes apparent that the sewing is broken or very loose, it must be disbound completely and resewn. A library rebind is normally the recommended option, but directions for this type of binding are available in bookbinding sources.⁶ This manual does not cover hinge tightening, both because directions for this process are available in other sources and because it is more appropriate for books than for

scores. The same stresses and poor binding practices that caused the hinge to become loose in the first place will soon weaken it again, given the type of use music often receives.

Spine and Cover Removal

Materials required:

- the score to be repaired
- a ruler and an x-acto knife

The appropriate treatment depends on the exact nature of the problem, and the four common conditions are as follows:

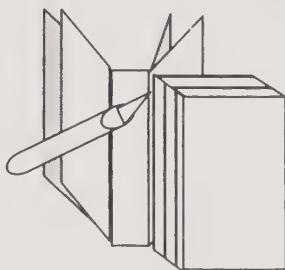
- If the spine of the score is loose, look beneath it to check the condition of the sewing. If the sewing is tight and the hinges are also still sound (the paper is intact on the inside of the covers and between the endleaves and the first few pages of the score or book), the spine cover can be replaced. Begin the spine cleaning with step 1.
 - If the sewing is loose or damaged, but the cover is firmly attached at both hinges (both at the endleaves and the first several pages of the text block) the score will need to be sewn back together, but a new spine can then be added using the directions for spine replacement. Begin the spine cleaning with step 1.
 - If the entire cover (not just the spine cloth) is becoming detached from the score, either at the endleaves or taking an outer page or so of text with it, or if the spine covering is not easy to remove but one or both hinges are damaged (the paper is torn and the cover is held in place only by thin *gauze*), or if there are loose signatures, start at step 2.
 - If the spine and hinges are intact but there is damage to the sewing of signatures (this can happen when library-bound scores are heavily used or vandalized), use the directions at step 3.
1. If the hinges of the score seem sound, lay a ruler along the spine edge of each cover board (the heavy front and back covers, not the thin spine board, if there is any left) by the hinge and carefully cut with the knife along the ruler to cut *only* the outside cloth covering along the edge of the score cover. Pull away any edges of spine cloth along the neat line you have cut, and tear off the strips of doubled cloth at either end of the spine. Trim away all spine cover material from the hinge area with scissors or a knife, right up to the edges of the cover boards.



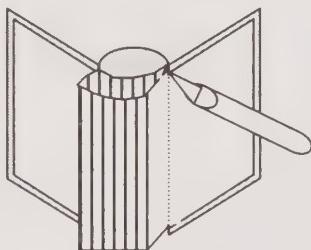
It is crucial throughout this step not to cut into the hinge itself. It is all right to show as much as $\frac{1}{8}$ " of the board cover once the cloth is cut off, but if the hinge material is cut through it will be necessary to recase the score. Continue with "Spine Cleaning," below.

2. If the inner hinges of the score are damaged (the paper is torn through with nothing but shreds of gauze beneath holding the cover in place), either right at the endleaves or a few pages into the textblock itself, cut through whatever remains of the damaged hinge to free the cover (and any attached pages) from the rest of the book block. Even if only one hinge is damaged it will still be worth replacing the cover, since this damage is usually caused by a poor original binding. Cut through the other hinge at the point where

the endleaf separates from the text block, either with scissors or an x-acto knife. The figure below illustrates how this may be done easily once one hinge is freed completely so that the back of the cover can be pulled out of the way, even if the spine of the cover is intact. Continue with "Spine Cleaning," below.



3. Scores that are already library bound may have a sturdier structural connection between the book block and the cover, and sometimes the sewing can be damaged leaving the cover attachment still very secure. It will still be necessary to remove the cover in order to repair the sewing. A similar situation exists for some brittle scores that must be removed from older library bindings to detach the pages for duplication. The best method is to cut through the layer of thick cloth and paper in the endleaf area between the book block and the cover board at each side. It should be possible to find this line between the cover board itself and the shoulder of the score, but it will not be clearly demarcated. Holding the score cover partly open, so that the hollow of the spine is accentuated, will help. Once the first hinge is cut, the case can be pulled away so the other side will be easier, as in step 2. An x-acto knife with a heavy handle and no. 24 blade is recommended for this process.



Once the book block is successfully detached, you may continue either with "Spine Cleaning," below, or with "Disbinding," which follows.

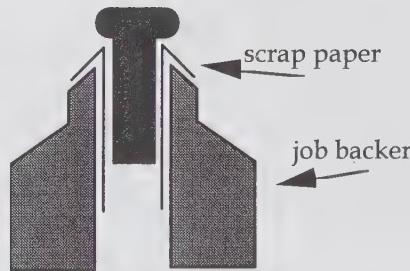
Spine Cleaning

Note that some new bindings use a type of glue that does not dissolve in water. If the methyl cellulose does not soften the glue when spine cleaning is attempted, an organic solvent will be required. Toluene should work, applied with a cotton swab and allowing about ten minutes' waiting time before scraping the spine with a bone folder. Several applications may be needed. You may also wish to reconsider the decision to rebind the volume in-house.

Materials required:

- a *job backer* or wooden *backing press*, referred to as “*job backer*” in the directions below
- two pieces of scrap paper, the size of the score or a little larger
- glue brushes
- a small amount of *methyl cellulose* prepared according to package directions and placed in a shallow glass dish
- a bone folder and a binder’s knife, paper towels

1. Remove any loose paper pieces from the spine of the score. If there is old *mull* underneath, do not try to remove it for a spine replacement (where the original covers and hinges are left on), though you will need to do so if you have removed the covers for recasing. If the mull is so fragile that the threads break and it comes off anyhow (this may take place during the glue removal below if the score is old), do not worry about it, unless it becomes obvious at that point that the sewing underneath is also falling apart. In that case, the score must be resewn. Sometimes with old scores the old glue can be pulled off dry, and the steps below will be unnecessary; often in these cases, however, the sewing is so old and loose that the score must be resewn.
2. Fold the long side of each piece of scrap paper over about 1" and crease it, then hang the pieces on either side of the job backer. The 1" side should hang over the outside lip with the rest of the scrap hanging down inside (illustrated in step 3). This will keep the book and the machine from getting gunked up with glue.
3. Place the score in the job backer with the spine and about $\frac{1}{4}$ " of the cover (if it is still attached) sticking out. Tighten the backer gently just until the score is held in place—you do not want to tighten down hard for this procedure, since it will leave marks on the cover or outer pages and may weaken the spine.



4. The spine at this point will have mull and old glue on it and may have paper that could not easily be removed dry. Methyl cellulose, sometimes used as a weak glue, will serve here to keep the glue and paper wet without allowing water to soak further into the text block.
5. Squeeze the water from a small glue brush and use it to apply a thick layer of methyl cellulose. Do not be stingy; if the layer is too thin it is liable to dry before the old glue is dissolved, and then you will have two layers of glue to remove instead of one.
6. Wait about five minutes for the glue and paper to soften. If there is a thick layer of paper on the spine, it will probably take longer.
7. Use the side of a bone folder or the back (not the sharp edge) of a binding knife to scrape off the softened glue and paper. The bone folder is preferable since it is less likely to damage the mull or the edges of the signatures beneath, but you may use the knife to remove paper remnants. It may be necessary to apply

more methyl cellulose after removing a layer of paper and let the glue beneath soften further. Then use the bone folder.

8. Use paper towels to wipe the bone folder or knife and to rub any glue remnants away from the spine. A little glue may still be visible between the signatures when you are finished; it is better to leave it there than to damage the paper of the signatures in an attempt to remove it.

The score is now ready to have its spine replaced, if the hinges are sound, or to have its sewing repaired as needed, new hinge assemblies added, and a new cover. The disbinding directions that follow here are only to be used if the sewing of the signatures is loose throughout and needs to be redone completely. If the score is tightly sewn with only a break in the middle of the text block (i.e., the book is now in two pieces) or with the end signatures loose or missing their outer pages, continue with "Interlock Sewing." If the outer pages of the text block have become detached from their signatures, follow the disbinding directions below to remove (only) those outer signatures. Once the center thread has been cut, all but the outermost folio of the signature should pull away easily. Carefully pull the front and back pages free from the endleaves, and their partners from the rest of the text block. Guard the torn folios back together, doing any other page repair that may be needed. In some cases, the detached outer pages become very damaged due to friction with the rest of the text block. In this case, they may be photocopied onto paper of a weight similar to that of the rest of the score and the photocopies cut to size and used instead. The desired result is a restored outer signature ready to sew. A similar approach may be used to replace pages in volumes that have been vandalized, if alternate copy can be located. See chapter 7 for directions for preparing preservation photocopies.

Disbinding

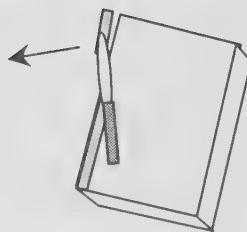
This procedure is included here as an optional safety measure for older materials that are to be sent for library rebinding. Once the work of disbinding and page repair is done, the rebinding of the score will be very straightforward and should not involve much chance of new damage or extra charges for conservation. The score could also be rebound in-house. However, the interlock sewing procedure given in this manual is not intended for the binding of an entire score, unless there are only two to four signatures. For thicker scores, the recommended procedure involves supporting the sewing with linen tapes; this can be found in standard works on bookbinding.⁷

Materials required:

- score to be disbound, cover removed
- sewing board
- binding knife
- materials for paper repair

1. Set the score on the edge of the sewing board. If there is glue adhering to the outside of the first signature, scrape it gently away with the back (blunt) edge of the binder's knife.

When scraping, always use a motion nearly perpendicular to the spine, pushing outward and downward, not along the spine (see the illustration on the next page). The object is always to push the glue straight away from the back of the top signature, and it will probably come away as a solid flap, still attached to the next lower signature along the spine, rather than in pieces. Leaving the glue flap intact will actually make it easier to remove the glue from subsequent signatures.



It is all right if the glue takes a thin layer of paper with it, but avoid tearing the paper with the knife.

2. Open the score to the middle of the first signature and cut the threads there with the binder's knife.
3. Carefully find the end of the signature.

Because the signatures are glued one to the next, it can sometimes be tricky to tell where one begins and the next ends. Normally the second half of the signature will have the same number of pages as the first half, but occasionally an extra page will be tipped in, which will throw off the count. Also, the outside page of the outer signatures sometimes tears away, sticking to the endleaves and cover, so that there is one less page in the first half of the first signature than in the second half.

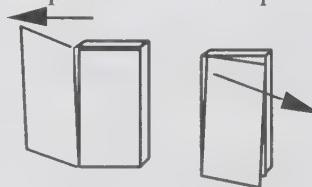
Open the score to the page you think is the end of the signature, then look closely at the top edge of the score and make sure that it is not a part of the next signature.



If there are no photographs, you usually can proceed safely in the inner signatures by counting pages.

4. Gently remove the top signature, pulling it away from the cut threads. Hold the signature in one hand with the score closed and pull it outward, away from the spine, starting at the top. If the glue is old, this will be relatively easy. In cases where you do need to rebind a score with new glue on it, the job of tearing it down will not be easy. Scraping the glue away from the top and back of each signature before attempting to remove it will be especially important; you will then be pulling paper free from glue only along the line between the two signatures.

The best removal technique is a rocking motion, where you open the score at the end of the first signature and gently pull that signature outward at the top to loosen the glue inside, then close the score and pull the signature away from the spine (see below), then open the score again to free a little more. Do this slowly and patiently to save the paper along the spine as much as possible.



5. When the first signature is free, push the glue away from the top and back of the second signature with the knife (see step 1), count the pages to the middle and cut the threads, then count the pages to the end of the signature, check to be sure there are no added pages and that you counted correctly, and remove the signature in the same way.

6. Repeat steps 1-5 until all signatures are free.
7. Remove any remaining glue from the outer fold of each signature, with your fingers or the blunt back of the binder's knife. To do this, it may be helpful to remove the outermost folio and spread it flat.
8. Check the outer folio of each signature for damage along the fold. If you can see light through much of the fold, guard it on the outside. If it is actually torn along much of the fold, guard it on both sides (guarding with paper strips and glue is not recommended for older scores). Japanese paper may be used for this purpose but may need to be torn into shorter strips than the full length of the spine to avoid shrinkage stress, depending on the particular properties of the paper used.
9. Perform any necessary paper conservation or repair on the pages while they are unbound. Always do erasing first, then other cleaning, then tape repairs, then deacidification (nonaqueous deacidification should be done after the score is rebound).
10. Replace missing or seriously damaged pages with photocopies made from the score in hand, other library copies or copies acquired through Interlibrary Loan, using the photocopy directions found in chapter 7. Trim the copies to size and guard them into place in their signatures.

The item is now ready to send for commercial sewing, or to sew on tapes in-house.

Hinge Preparation

Most of the strain of opening, closing and hanging in a hard binding is concentrated at the hinge of a score, which is therefore ideally reinforced with cloth, as well as by certain structural factors discussed below. Library binders attach the hinges to the outer signatures of rebound scores by a variety of means. The sturdiest yet most reversible solution is to create two complete extra signatures to which the cloth hinges are glued and sew these new signatures onto the rest of the score.

Materials required:

- book block (cover removed)
- pencil, ruler
- paper cutter and heavy acid-free paper
- F-grade buckram, glue and brush

1. Measure the height and width of one page of the score to be rebound, then double the width to get the dimensions of a signature opened out flat.
2. Cut four pieces of heavy acid-free paper to those dimensions and fold them in half (thus to the size of the score signatures), making sure that the grain is running along the spine.
3. Cut two pieces of buckram to the height of the signatures, 2" wide, making sure the grain follows the spine. Use the color you plan to use for the outside cover of the score.
4. Cut two pieces of scrap paper, at least 2" longer than the height of the score and at least 3" wide.
5. Fold the four heavy white paper pieces together into two signatures of two sheets each. These will be your endleaves. Set them to one side, within easy reach, and have glue and a glue brush ready.

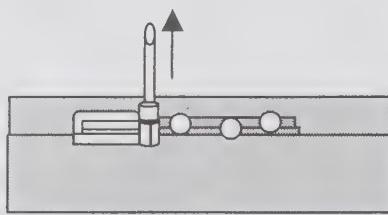
6. Roughen the glaze along one long edge of each piece of buckram by running it once or twice between your thumbnail and index finger. Do not be too enthusiastic, or the edge will pucker—you want it to remain straight and flat, but not so smooth that glue will not stick. This step is particularly important with acrylic-sized buckram.

Note that this means you will be gluing the glazed side, the outside, of the buckram. This is what you want.

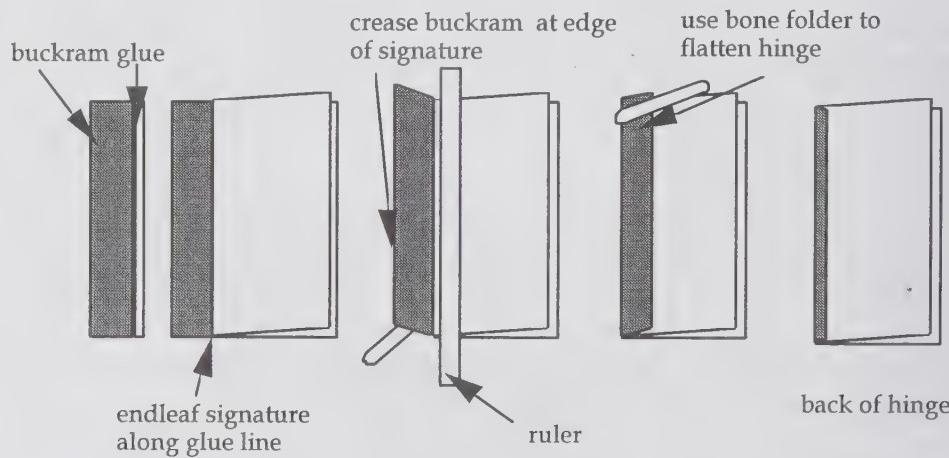
7. Lay the scrap pieces and the buckram pieces as shown in the diagram below, so that $\frac{1}{8}''$ - $\frac{3}{16}''$ of the glazed edges that you roughened are exposed.



8. Dab glue onto the exposed edges, brushing outward from the top piece of scrap paper, stencil style, to keep glue from getting underneath any of the edges. A thin covering of glue is sufficient. It works best to dab dots of glue along the length of the strips before beginning to brush, so as to distribute the glue more evenly along the area to be covered without having to dip the brush more than once.



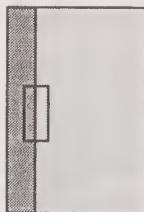
9. Working quickly, remove the scrap paper, lay out each buckram piece as shown in the figure below, and lay the folded edges of the endleaf signatures along the lines of glue.



Try to keep the folded edges neatly parallel to the buckram pieces, which now will be your hinges, by making sure they are aligned along the edge of the glue.

10. Flatten the endleaf folds onto the hinge pieces with a bone folder. (See the illustration above for steps 10-12.)

11. Lay the ruler along the edge of the endleaf fold on one set of endleaves. Run the bone folder underneath the buckram along the edge of the ruler to crease the buckram up along the fold of the paper. Remove the ruler.
 12. Fold the buckram hinge over the fold of the paper and flatten it with the bone folder, so that there is a thin strip, glued down, showing on one side of the hinge/endleaf and the rest of the buckram, not glued down, on the other side.
- The glazed side of the hinge cloth will lie against the endleaf pages. Later you will glue the unglazed side down against the cover of the score.
13. Repeat steps 11-12 with the other set of endleaves.
 14. Cut a piece of scrap paper the size of the endleaf sheets, then cut it in half, so that each half is the size of a folded-over endleaf. Place one half between the hinge cloth and the outer endleaf of each of the two end signatures and tape them in place to protect the endleaves from dirt and damage during the rest of the binding.



You will sew these hinge/endleaf signatures onto the rest of the book block so that you have the advantage of a glued-on hinge without the disadvantage of a hinge that tears the text block apart if it has to be removed.

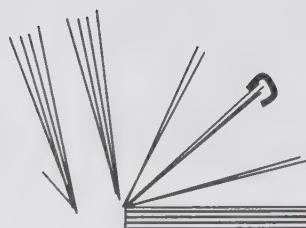
Interlock Sewing Signatures to a Book Block

Interlock sewing may be used to attach hinges, to reattach loose signatures to a score or sew a broken score together. The directions may also be adapted to sew two to four signatures together to make a small score.

Materials required:

- the book block, most sewing still intact
- the signatures to be attached (including hinge signatures), with all repairs completed
- sewing board
- needle and thread, scissors, bone folder
- one or two bulldog clamps

1. Find the centers of the top two tightly attached signatures in the book block (if the sewing is loose between the top signatures, start with the first two tightly attached ones). Open each of the two adjacent signatures at its center and clamp them together with the bulldog clamp. Because they are tightly attached at the spine, this will be simple. The figure below illustrates a book block with two signatures clamped, plus one loosely attached signature and the new, unattached endleaf signature (with hinge) waiting to be added.



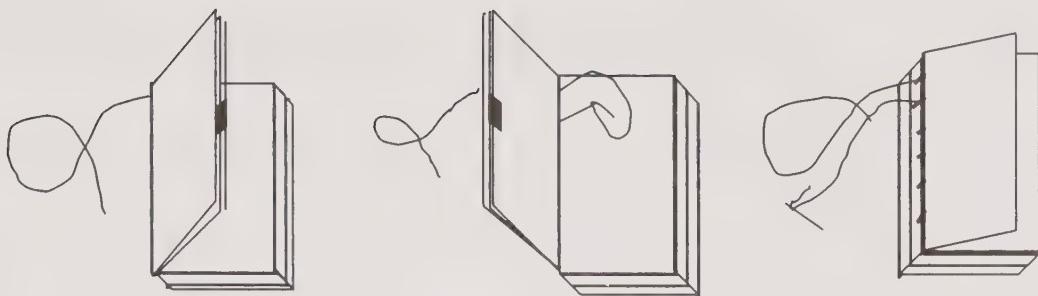
2. Put all the signatures to be sewn (at that end of the score only, but including the hinge signature) in place above the clamped signatures so that the spine edges are even and square, and mark six or eight evenly spaced marks along the length of the spine, being sure each signature to be sewn is marked. Use more or fewer marks for very large or small items, but always an even number. Avoid using old, worn sewing holes, even if that means that the spacing is uneven.



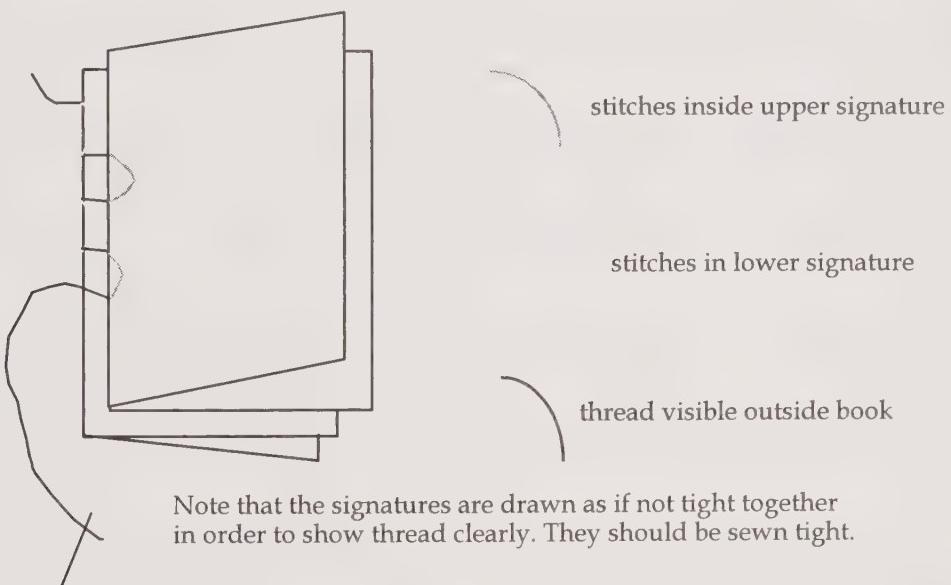
3. Starting with the lower clamped signature, count the number of signatures that you will be sewing together, including the endleaf signature, on that end of the score. There will be at least three (the two tightly attached signatures and the endleaf signature) but there may be one or more loosely attached or loose signatures as well. Measure a piece of thread as many book lengths as the number of signatures, plus one extra.
4. Cut any remaining threads from the centers of all the unclamped loose outer signatures, remove the signatures and set them aside. Place the book block on the sewing board, spine flush with the edge. (If you have not developed a facility with sewing on a board with pamphlet binding, you will now be at a disadvantage, because the board is necessary for all other types of sewing.)
5. Thread your needle, then pierce and sew through the thread close to the short end, pulling the pierced thread onto the needle and then the short end tight so that the thread will not slip. Do not knot the long end. *Wax* the thread.



6. Open the *lower* of the two clamped signatures at its center, sew into the top mark on the spine from the outside, then back out through the second mark. You will need to move the opened pages back and forth in order to place the needle, inside, so as to come out at the mark on the outside; hold the bottom pages firmly in place. Pull the thread through, leaving a few inches at the end. See illustration next page.



7. Now open the upper clamped signature at its center. Sew into the same mark (but on the new signature) that you came out of from the one below, then sew out at the next mark, flipping the pages to see the needle and the mark as before. Pull the thread through gently taut, pulling always along the spine as in pamphlet binding (it is even more important here, since the paper is not reinforced).
8. Open the lower clamped signature at its center, sew in through the mark you came out of on the top signature, and out at the next mark. Pull the thread tight. There should now be two long stitches showing inside the lower signature, one long stitch inside the upper signature, and two tiny stitches showing on the outside of the spine.
2. Continue as above. Pull the thread taut, always along the spine, each time the needle is on the outside of the spine. Do not pull the thread all the way through on the inside—it wastes time.



10. When you get to the other end of the spine, turn around (as it were), sewing into the upper signature's outermost mark and out at the next mark in. You will not need to flip back and forth, since the holes are defined, but you do need to be careful not to pierce the thread as you sew—this is important, as in pamphlet binding.

Do not sew back into the lower signature.

11. Find the center of the next signature to be attached and remove the bulldog clamp from the score.

12. Clamp the new signature to the one that was the upper clamped signature. That one will now be on the bottom and the new one on the top. Hold the clamp open and make sure that the new signature is square along the spine with the ones below, so that the sewing marks you made match perfectly.
13. Sew into the new upper signature from the outside at the second mark from the edge and back out through the third mark from the edge (flipping once again to see the marks).

Note that this means the innermost signature involved (the old bottom signature) has only a broken line of stitches, since you added a new signature before sewing back up to the top. That is why you begin with signatures that are already firmly attached.

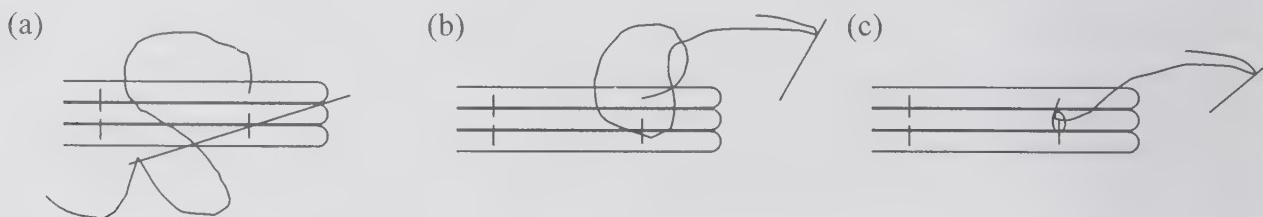
14. Continue stitching to the other end of the spine. You should end up sewing out of the end mark on the now-lower (started as the upper) signature, right next to the tail of thread left back at the beginning.

If you see a long stitch on the outer spine, you have made a mistake; go back and correct it by cutting the thread at the needle, undoing the stitches back to the mistake, rethreading the needle and resewing.

15. Flatten the signatures together along the spine with the bone folder. Check the insides of all three signatures to be sure that the thread is tight all along the book, pulling the two ends to tighten it. If one or more stitches inside any signature will not tighten, it is because you have sewn through the thread. Cut the thread at the needle and undo the stitches back to the sewn-through stitch to go back and correct it, as in the last step.
16. When the stitching is tight, tie the thread ends together in a square knot. Be sure to tighten both threads together, as in pamphlet binding

There should now be a full line of stitching down the center of the lower clamped signature, with interrupted stitching down the centers of the signatures above and below it.

17. Sew back in through the outside mark on the upper clamped signature, and back out through the next mark in.
18. If there are more signatures to add, go to step 20. If the current upper clamped signature is the hinge signature, keep sewing to the other end of the spine, alternating upper and lower signatures as before. You will then have a full line of stitching down the center of the upper signature, and a dotted line of double stitching on the lower. You should end with the needle coming out of the top signature at the end mark.
19. Secure this end of the upper signature to the lower one with a double *kettle stitch*: (a) Insert the needle under the stitch connecting the two signatures below the one you are sewing from; this will be easiest with the needle following the “ditch” between the two signatures; it is shown slanted in the figure below for clarity; (b) Pull the thread through, and insert the needle through the loop just formed, to make a knot; (c) Pull the knot tight. Repeat the whole procedure for the second kettle stitch.



You are now finished with this half of the score; cut the ends of the thread to $\frac{3}{4}$ " and repeat the interlock sewing procedure with the hinge signature at the other end of the score, then go to step 23.

20. If this was not the endleaf signature, repeat steps 10-13. Continue sewing to the end of the spine.
21. Repeat the flattening and tightening (step 15) and attach the lower clamped signature to the one below it with a single kettle stitch (see directions in step 19, but only a single kettle stitch is needed here).
22. Continue to add a new signature and move the clamp each time you get to the end of the spine, until you have added the endleaf signature and are ready to finish with steps 18-19. Always remember to flatten with the bone folder, tighten the thread, check for incorrect stitches and pierced thread, and tighten the thread again and kettle stitch before turning around and adding the next signature.
23. Mark the *head* of the score by writing "Head" in pencil on the piece of protective scrap at the top of the front of the book block. This will help in orienting the cover correctly.
24. Continue with "Trimming" (if desired) and "Rounding and Backing." Because you have not disbound the item completely, this process should be done gently, but should be fairly easy.

Variation: Sewing Two Parts of a Score Together

Sometimes book blocks break along the joint between two interior signatures, or the sewing in one part of the spine becomes loosened. The repair of this type of damage involves the same interlock sewing principles used above, but it should not be attempted without practice at adding single signatures. The fact that you are shifting a whole section of a score back and forth as you sew, instead of just a few pages, makes the process more difficult, though otherwise the procedure is the same. Follow steps 1-5 above, except:

At step 3, when counting the total number of signatures to be involved, be sure to go out to the second firmly attached signature on either side of the break or loose area (which may involve several loose signatures). If there are more than four loose signatures, reconsider this treatment; unsupported interlock sewing will never be as tight as rebinding on tapes. If the score is fragile and will receive light use, however, this may still be the best repair option. Note that the long thread will become unwieldy if many signatures are involved; more threads can be cut and tied together as you sew, but this will further compromise the tightness of the sewing.

Once the sewing holes are marked, cut all loose signatures free and remove the old thread. You should now have two solidly sewn sections and perhaps one or more loose signatures. If the score is very thick and broken in more than one place, treat each break separately.

At step 5, begin by clamping and sewing the two outer tightly bound signatures of the largest solid section of the text block. Continue by adding the loose sections (if any), following the directions above. Finally, add the smaller tightly bound section, using the same technique, and sew into the second tightly bound signature of the added section.

Because you are continuing into a section that is already tightly bound, finish your sewing with a double kettle stitch after only a single pass through the second tightly bound signature, so that no signature in the repaired area has double stitching.

You will still need to finish with new endleaf hinges as above. Mark the head of the book block, trim if desired, and continue with "Rounding and Backing."

Double-Fan Adhesive Binding

Commercial library adhesive binding is normally recommended for items that arrive in separate pages (sometimes held together by spiral bindings or staples) or have been adhesive bound by publishers. However, it is quite possible to produce a quality adhesive bind in-house, and for certain items such as the small booklets inserted in CD boxes, in-house binding may be a valuable option.

Materials required:

- the score or booklet to be rebound
- guillotine paper cutter and job backer
- portable wooden book press
- Planatol glue and a small brush
- scissors and mull
- hot plate
- *backing hammer*

Remove Old Page Attachment

1. If the item is already bound, remove the old cover. In the case of a paperback, simply tear it off. Cut the hinges on a hard-cover score and pull off the cardboard covers, endleaves and spine covering. *If there are staples in the old binding, remove them.* They will dull the cutter blade when you cut off the spine. If there is a spiral binding, remove it.
2. Measure the width of the text block. Use the width of the top page, from the outer edge to the top of the shoulder, for rounded and backed scores. For spiral bindings, measure from the edges of the holes, unless you intend to keep the holes in your final binding.
3. Set the back stop of the guillotine paper cutter at your measurement minus $\frac{1}{8}$ ". (This will convert to 0.0125" on a digital readout.) If you are cutting off holes, do not subtract the $\frac{1}{8}$ ".

Double check the inner margin of the score, to be sure that you will not cut into text if you cut off $\frac{1}{8}$ ".

4. Set the score against the back stop with the spine outward and place a scrap of cardboard on top to cushion the score from the metal clamp; be sure to set the cardboard behind the point where the blade will come down, since cutting through it will dull the blade.

If the old spine was rounded and backed, use a piece of cardboard beneath the score as well, to keep the spine perpendicular to the blade. Again, be sure that the cardboard is out of the way of the blade.

5. If $\frac{1}{8}$ " is obviously not enough to cut the old spine from the score, move it out slightly. Keep in mind, however, that the spine may shift as you cut it, and once you cut the text off a lot of pages, it takes a lot of work to put it back! It is generally better to use several cuts, if necessary.
6. Tighten the clamp firmly down on the score, checking that the outer edge of the score is flush along the back rest and no card board extends into the blade area. Cut off the old spine.

If the old spine is rounded, press the center of the score inward while tightening the clamp, so that all points on the spine are equidistant from the blade.

7. Unscrew the clamp and check the score. If there are still holes showing, in the case of a spiral or oversewn binding, or glue between many pages, move the back stop in slightly—no more than $1/16"$ —and cut again. When all of the old spine is shaved off, remove the score from the cutter.

Prepare Endpapers

8. Measure the new dimensions of the text block (now a collection of single sheets). Call the height and width **H** and **W** as usual; use exact measurements.
9. Cut two pieces of medium weight paper to the same height as the text block and twice the width, so that when each sheet is folded double it will be the same size as the score.

Make sure the grain runs along the fold, which will be at the spine of the score.

10. Fold the sheets in half and flatten them with the bone folder. Place one at each end of the score, with the fold where the spine of the score will be. These will be the endpapers.

Prepare Spine Edge for Gluing

11. Place the portable wooden book press flat on a solid, even work space, and place the score between the jaws of the portable press, held loosely (not tightly) in place.
12. Tamp the text block gently on the work surface, between the jaws of the book press, until all pages and endleaves are a compact block, perfectly even all around. Tamp first with the spine downward, then turn the score to tamp the block with the head downward, then turn it back again and tamp the spine again.
13. Tighten the jaws of the press while holding the score upright in place. Be careful not to allow the pages to flop over in either direction, which would throw the spine out of square.
14. With the score tightly clamped, turn score and press together upside down and place the score in the job backer, with outer edge of the wooden press resting on the outer edge of the clamp of the job backer. Tighten the job backer over the pages of the score protruding from the wooden press.
15. When the score is held tightly in the job backer, remove the portable book press. Check that the protruding spine edge of the text block is perfectly flat and even. Try fanning the edge of the text block back and forth. The lowest page of the fanned-out block should curve gently to about a 90° angle (see illustration at step 19).
16. If the edge of the text block protrudes too much or too little to fan easily to that angle, loosen the clamp of the job backer slightly and move the block up or down, being very careful not to allow the block to become twisted or slanted.

Fan and Apply Glue

17. Cut a piece of super to the following dimensions:

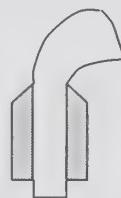
Length = $H - \frac{3}{4}''$

width = approximate width of spine + 2"

This means it will overlap the spine about an inch on either side, and leave about $\frac{3}{8}''$ uncovered at either end of the score. These measurements need not be perfectly precise.

18. Squeeze the water from a small brush and have ready an open jar of high quality glue.

19. With one hand fan the spine of the score in one direction, as far as it will comfortably go. The block should curve over an angle of about 90° .



If any gaps show between pages, it is because two or more pages are still held together by remaining glue. Separate all pages and remove any remaining glue with a binder's knife or your fingernail. This is important because the fanning of the pages in either direction while gluing means that each page will be tipped onto its neighbor, ever so slightly. Pages that are attached by glue remaining from the commercial binding will not be properly tipped together, and the commercial glues tend not to hold as well.

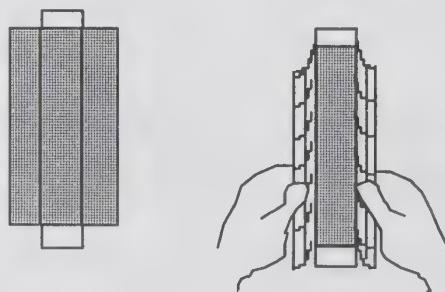
20. Brush a thin layer of glue along the spine, brushing in both directions along the length of the spine except at the ends. Here you should brush only outward, to avoid getting glue over the corner of the block.

21. Once the fanned spine is covered with a thin, even layer of glue, fan it in the other direction and glue again, not adding much more glue, but making sure that it is evenly spread in both directions.

It will not fan as evenly the second time, due to the glue you have just applied; this is normal.

22. Lay over the spine the piece of super you have cut, centering it by eye.

23. Starting at one end and working toward the other, pull the overlapping edges gently downward on either side to pull the super tightly over the spine.



Do not pull tightly on the first pass, as this will wrinkle the material and warp the spine. Instead go back and forth several times, pulling a little tighter on each pass.

The more evenly parallel you keep your hands on either side and the more you balance the pulling motion, the less the spine will warp during this process. A little warping is inevitable on narrow spines.

24. Once the super is pulled tightly over the spine, let it dry for at least an hour, preferably overnight. Leave it in the job backer if no one needs the machine for another project. Otherwise set it on a drying shelf with the wet edge sticking out, off the edge of the shelf.

Anneal the Glue

25. When the glue is thoroughly dry, turn the hot plate to a medium setting.

It will take two to three minutes to heat up; this will give you time to get materials ready for rounding and backing your score, which should be done while the glue is hot.

26. Holding the score in one hand and the plug (or other cool handle) of the hot plate in the other, move the spine of the score back and forth across the surface of the hot plate until the glue all along the spine is evenly heated and soft.

The glue may burn slightly brown in spots where it is thick and the glue sticking to the plate may smoke. If the score does not glide smoothly back and forth, the plate is not hot enough. If the glue starts to smoke at once, or turns dark brown on the spine, the plate is too hot. Glue sticking to the plate should be scraped away with a binder's knife when the rounding and backing process is complete, before the plate cools.

27. When the glue is warm and soft, lay the score on its side on the butcher block and even out any warped areas by tapping it gently with a backing hammer and smoothing it with your fingers.

28. Mark the head of the score. This is normally done by writing "head" lightly in pencil at the top of the front endleaf, so that when the score is put in its cover, it is easier to get the orientation correct.

29. Trim the outer edges of the new text block as described below. Trimming is usually recommended for adhesive binds, but if the margins are very narrow, this step may be omitted; if you forget to trim the text block before rounding and backing, it is better not to try to trim it afterward. While the glue is still warm, continue by rounding and backing the spine.

Rebinding CD Booklets

To rebind a CD booklet into a new hard cover, use the directions above as given, with the following minor alterations. The pages are often glossy, and it will help them take glue better if the text block is abraded with a file at step 15. Important information, such as the list of tracks, is often included on the glossy outer covers of the booklets, but these covers are too glossy and heavy to work well in an adhesive bind. The best method to include the information is to photocopy the outer covers onto paper of a similar weight to that of the rest of the booklet and cut the copies to the same size after the rest of the text block is trimmed, before step 8.

Depending on your library's circulation methods, it may be desirable to rebind a CD booklet into its original cover, in order to fit back into the original slipcase. This is also possible, using the directions above with the following alterations:

- At step 1, Remove the cover of the CD booklet carefully and do any necessary guarding and repairs. In many cases the cover will be in several pieces, including front and back covers and pieces of the spine. Reusing any material that is left will help keep the booklet identifiable to patrons.
- At step 27, trim the edges of the super to about $\frac{3}{8}$ " and skip directly to Cover Attachment, page 116, without doing any trimming or rounding and backing, or adding a hollow back. All of the steps referred to below are from that procedure.
- At step 3 on p. 117, note that the booklet will of course be flush in its cover.
- At step 8 it may be necessary to trim the outer endleaf (which will later be pasted onto the outer cover) in order to avoid covering important information. It is fine to trim it to as little as $\frac{1}{2}$ " width.
- At step 13 you will need to protect the inner endleaf during the gluing with a scrap sheet. Replace the scrap sheet with blotter paper at the tend of step 14.
- At step 16 you need not worry about crushing the spine and you do need to be sure that the narrow strip of super and paste-down are clamped, so for CD booklets it is best to center the booklet between the boards on all sides, without the spine edge protruding. You should also avoid using brass edged boards, since the booklet may not be thick enough to hold the brass edges apart.

Trimming

It is not necessary to trim text blocks after sewing them, but doing so will generally produce a more pleasing finished look in scores sewn for the first time, and also remove worn edges from the head and tail (top and bottom edges) of older scores. For scores that are resewn, and that already have a well-defined curve to the spine and fore edge, trimming the fore edge will prevent it from ever being as curved as it was and is not recommended, both for purely aesthetic reasons and because the margins of the outer pages will lose more paper than those of the inner pages. However, if your conservation area has a power guillotine cutter, by all means use it if you wish, to trim the head and tail of the score. Take note, however, of margins before doing so, since some music may have narrow margins to begin with, and may have been further trimmed on its first binding. Also, if you choose to trim a score that has previously been rounded and backed, note that it is important to protect the spine of the score being trimmed by placing a piece of cover board or other thick board under the text block to support the shoulder, as shown below. Otherwise the clamp of the cutter might damage the spine. trimming a backed score is not normally recommended.



Rounding and Backing

The purpose of rounding and backing is to distribute more evenly over the spine both the weight of the book or score as it stands on the shelf and the strain of opening and closing the covers. Otherwise, both types of stress will be concentrated right along the hinge between the score and the cover. Traditional book architecture here makes use of the arch concept developed for the very same purpose in building architecture. Most publishers' bindings involve insufficient rounding and backing to support the light materials used, with the result that the covers quickly separate from the book block along the hinge. If you are doing a spine cloth re-

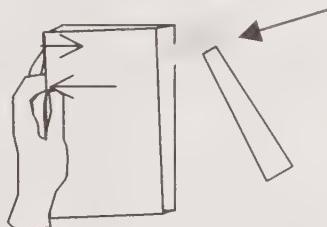
placement and the back of the score is flat (which is now the rule in commercial-grade case bindings), round and back the score as much as possible without damaging the sewing. The flat back combined with an inappropriately tight hinge is probably the reason the spine needed to be replaced, and a new spine cloth added to the flat back will look unsatisfactory (loose and possibly wrinkled). If the score completely resists rounding, it should probably be rebound by a library binder. The library bindery will not round it either but will apply hinges designed for flat backs.⁸

Materials required:

- the score block to be rounded and backed (with or without covers attached)
- a sturdy table and a *backing hammer*
- the job backer; if a wooden backer is used, brass edges are strongly recommended

Rounding

1. Lay the score flat on the table. Open the cover (if present) and top few pages—more than just the end leaves, but not more than eight pages—and hold them between thumb and forefinger of one hand. (Your left hand is best, if you are right-handed, or vice versa.)
2. Resting the other fingers of that hand against the outer edge of the rest of the book block, pull the top few pages outward from the spine with thumb and forefinger while pushing at the lower part of the rest of the book block with the other fingers, so that the top of the spine of the score is pulled toward your hand. Do not push or pull too hard, since you do not want to damage the hinge or tear pages.
3. Strike the spine of the score with the hammer (held in your other hand), using glancing blows aimed mostly toward the hand holding the pages. The idea is to make at least the top half of the spine slant toward the hand holding the pages. Move both hands up and down the spine, pushing and pulling with one hand and beating with the other. Note that while the pushing and pulling should be gentle, you can hit pretty hard with the hammer—and must do so, in order for the rounding to work.



4. When the spine is bent over one way, turn the score over and repeat the procedure, trying to bend the spine the other way.

You can be quite aggressive with the hammer, though not with the pulling, as long as the sewing or glue is reasonably sturdy.

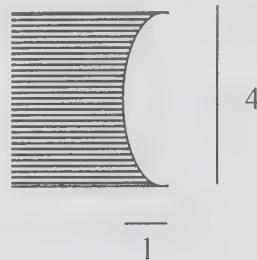
5. Continue to repeat this procedure, turning the score over several times.

At first it will seem that you are simply bending the entire spine first one way, then the other, but after a few turns, the spine will begin to be rounded.

6. Depending on the type of binding and the thickness of the spine, you will want to alter your grip on the pages and the aim of your hammer in order to produce as even a curve as possible. Narrow spines will

never achieve a great deal of curve, while large scores with loosely sewn bindings will round almost too readily and too much.

7. The easiest way to measure the curve is to look at the fore edge of the score rather than the spine. You can consider the rounding job done when the depth of the curve is about one-fourth the width of the spine. The Library of Congress specifications call for a one to three (1:3) ratio of curvature, but this is deeper than one normally sees on books and causes problems with backing.



8. Finish the rounding with your fingers, to be sure that the curve is even. If the spine of the score was bound unevenly to start with, this may be difficult or impossible; do your best.

Backing

9. Set the score in the job backer with the spine on top, holding the score from beneath. Close the clamp until the score is barely held and can be moved up and down.
10. Move the score into a position with the spine above the jaws of the backer, showing about $\frac{1}{16}$ "- $\frac{1}{8}$ " of the hinge cloth evenly all around the score, so that no corner of the spine is higher or lower than its neighbors. When backing as part of a spine replacement, have the edges of the covers flush with the edges of the jaws.

It may become apparent at this point that the spine of the score is still a little unevenly curved. If so, remove it and try to correct the problem by shaping the curve with your fingers again, then set it back in the backer.

11. Once the score is properly aligned in the backer, screw the clamp down as tightly as possible. With a wooden backer this will not be very tight (to prevent damage to the backer), but a large metal job backer should be screwed down as tightly as the operator can manage.
12. The tight clamping will begin to make the spine mushroom out at the sides, at least on a metal backer. You will be using the hammer to accentuate this phenomenon.
13. If either side of the spine is less mushroomed, begin on that side. Gently but firmly beat the spine outward from the center. If the score is bound on tapes, hammer on the tapes first, then the spaces in between and around them. If you are using a wooden book press without brass edges you must be gentle, and the backing probably will not proceed very far; do what you can. Do not try to do one side completely before going to the other side or the score will come out lopsided.
14. Start by aiming your blows close to the center of the spine on each side, hitting mostly outward rather than downward, only once at any given spot. When you have covered one side thoroughly in this manner (starting with the tapes, if there are any), walk around to the other side of the backer and do the other side of the spine. You will not see a great deal of difference yet but will have squashed the center of the spine

toward the outside on either side. If you are too enthusiastic at this point, you may strain the sewing in the center of the spine.

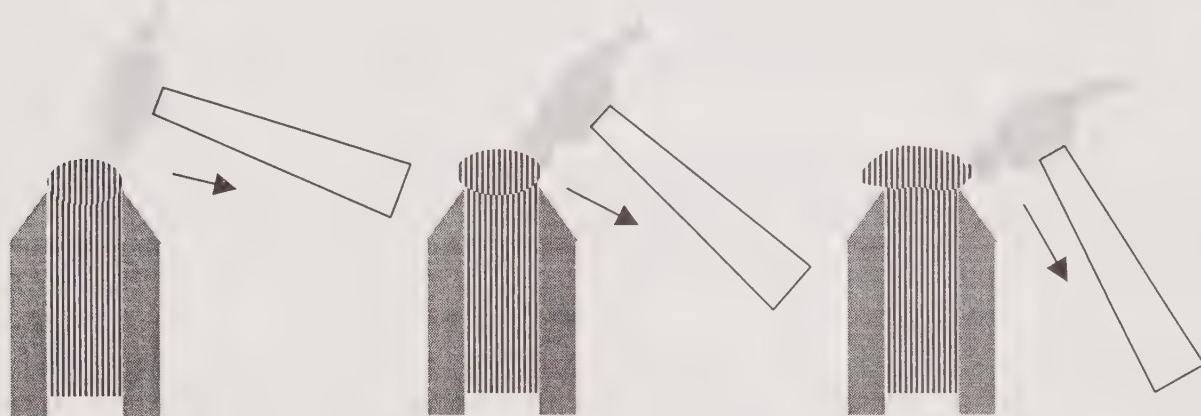
When you have finished hammering near the center along both sides, return to the side you started on. Now aim the blows further out from the center of the spine, still glancing off to the side. (See the figure at step 15.) If you hear the hammer bouncing off the metal of the jaws at every blow, you are directing it too much in a downward direction.

You will notice that you can now see the result of each blow; the side of the spine will bulge out a little more over the side of the backer. Try to make your blows even and evenly spaced (except for starting with the tapes first, as always) so that the new edge of the spine is even.

15. When you return to the first side for the third time, aim at the edge of the spine (starting on the tapes, as before) and use more downward blows (now your hammer will glance off the metal slightly at each stroke—but avoid this with a wooden-edged backer). This time try to get the edge of the spine to stand out perpendicular to the side of the score. Again, try to use even blows, evenly and narrowly spaced, so that the edge of the spine is smooth.

Go back and even out any places along the first side of the spine that seem to need it, except for where the tapes may prevent the spine of a tape sewn score being perfectly even.

Finish the other side.



16. Look at the spine from either end. It should look like a mushroom with the edges of the spine out at right angles from the sides of the score. The edges should not actually protrude beyond the outer surface of the cover if there is one.

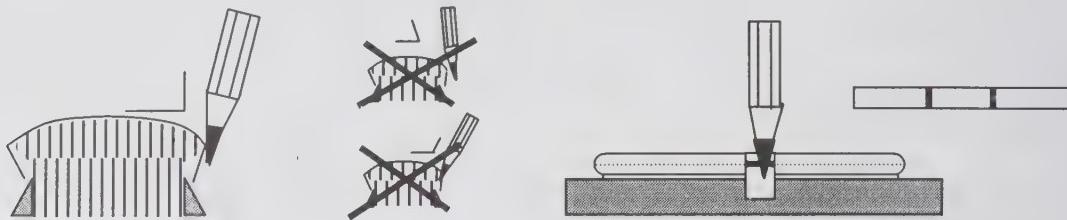
Hollow Back

This technique is used whenever any sort of spine cover is applied to a score, whether only the spine cloth is replaced or the entire score is being rebound or bound for the first time. The hollow back is essentially a tube of paper squashed flat and glued to the score on one side and the spine covering on the other. It allows the spine and covering to bend independently of one another when the score is open, making the score as a whole much more flexible and, therefore, longer lived. In terms of making a long-lasting repair, it is one of the most efficient operations used in book binding.

Materials required:

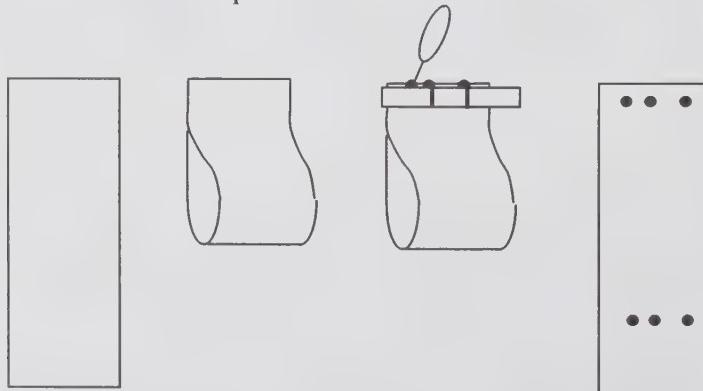
- the score ready to be covered or recovered, its spine clean and firmly bound, rounded, and backed, still in the job backer
- a narrow strip of scrap paper and a sharp pencil (a pen will not work)
- a piece of lightweight acid-free paper, at least as long as the score is tall and at least three times the width of the spine, with the grain running the length of the spine
- a cutting mat, a ruler, a bone folder with a pointed end, an x-acto knife, no. 11 blade, and an awl
- PVA glue and a small brush, scissors, the job backer or a wooden book press, a roll of *headband* (optional), and a paper towel (also optional)

1. Hold a strip of scrap paper tightly around the spine of the score, and rub the side (not the point) of a pencil along the shoulder of the spine on either side. This should make a single line along the widest point of the shoulder on each side. Make sure the edge of the pencil lead is perpendicular to the spine, as shown.



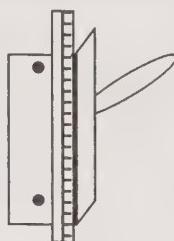
If the paper is not held tightly in place, or the side of the pencil lead is not perpendicular to the spine, the hollow back may come out too wide or too narrow.

2. Take your new measurement to the cutting mat, along with the acid-free paper, the ruler, the bone folder, and the awl.
3. Lay the two short ends of the acid-free paper together. Do not crease the paper—simply keep the ends evenly together with the middle of the paper gently rounded over, as shown in the illustration at step 4. This is done so that you can make marks with the point of the awl through both ends of the paper at the same time, guaranteeing parallel lines between the marks.
4. Hold the paper in place with one hand, and with the other lay your scrap with its measurement along the joined edges. Make the first mark (piercing both sheets of the paper with the point of the awl) about two-thirds of the width of the spine in from one side. Make the second mark the exact width of the spine away, and the third mark two-thirds of the spine width in from the second.



5. Release the ends of the acid-free paper so that it can lie flat. There should be six marks made by the awl, three at each end. Lay the ruler down as a straightedge to make a crease straight down the paper between

the first marks you made, two-thirds of the spine width in from the edge. Use the bone folder from underneath to crease the paper up along the ruler, from one end of the sheet to the other.

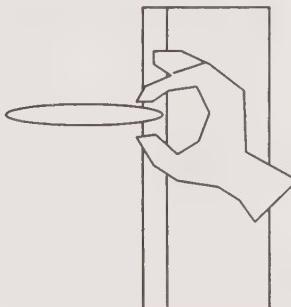


6. Make a second crease using the next pair of marks.
7. Lay the ruler over the third pair of marks and cut the paper along the ruler with the knife. You should now have a long narrow piece of paper with two creases running with the grain.

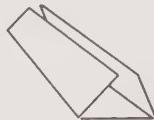


8. Gently turn up each crease between thumb and forefinger of both hands, starting with hands in the center of the sheet and moving outward along the crease to the edge. Repeat this motion several times to fold the edge first upward, then over; press along the fold, and finally burnish it down flat with the bone folder. This must be done carefully and gently. If you try to work too quickly at this point, you are liable to end up with wrinkles or curves in the folded edge.

When burnishing the crease into place, use the thumb and forefinger of the hand not holding the bone folder to hold the creased area in place on either side of the bone folder. This is also important to prevent wrinkles.



9. Repeat the process with the other crease. You should now have a long trifold of paper with the edges slightly overlapping. It should be the exact width of the spine of your score. Once you glue it in place, it will act like a flattened tube, as described above.



10. Place your score in the job backer with the spine exposed. Tighten the press gently, just enough to hold the score in place.

11. Cut your new hollow back to the length of the spine of the score. Check it against the spine of the score to make sure that it is not too wide. If it extends past the widest part of the shoulder and down into the hinge area, it is too wide and you must make another one.
12. Cut two pieces of headband material, whatever color you think best matches the color of the cover, to the exact width of the spine. Be sure that they are no wider than the spine. Headbands that are a little short are not a serious problem, but if they are too long they will interfere with the hinge of the score and weaken it. The headband is ornamental and can be omitted.
13. Squeeze the water from a small glue brush and apply a thin layer of PVA glue to the entire spine of the score. Brush in both directions except at the ends—only brush outward there, so as not to get glue on the head or tail edge.
14. Place your headbands at either end of the score, with the more colorful side down, facing the eventual reader of the score. The rounded top should protrude above the top of the pages with the rest of the flat material glued down. Apply a little bit of glue to the exposed backs of the headbands.
15. Lay the hollow back in place over the spine and headbands, with the folded edges against the spine and the smooth back showing. For a brief period, you will be able to move it back and forth for perfect placement, sliding on the glue before it begins to dry. Make sure that it extends no further than the widest part of the shoulder at any point along the sides.
16. Lay a piece of paper towel over the spine (this is optional and may not be necessary—it merely keeps your fingers from getting gluey) and rub your hand back and forth until the hollow back is glued flat to the score and no longer springs up at the edges. Remove the paper towel, pulling it back straight along the spine (rather than in an upward direction) to prevent the hollow back from coming up with it and use the bone folder to further flatten the hollow back along the spine, especially at the edges. It is important that the hollow back be glued thoroughly and tightly to the spine.

If you are recasing a score, skip the section on cloth spine replacement and move to the section on cover preparation.

Cloth Spine Replacement

The directions below continue the process of replacing the cloth spine covering (begun with step 1 of “Spine and Cover Removal” on page 78) on a score whose hinges and cover are otherwise intact. Measuring to cut a replacement spine cloth, when you are not making a whole new cover, is done with a narrow scrap, like the measurement of the hollow back. This time, however, you must take not only the measurement of the width of the spine, but also mark the amount of cloth needed to cover the hinge that is already in place on the score. New spine cloth can be either glued down over the cover boards or, in cases where the old covers have aesthetic interest, incorporated under the old cover cloth. The directions immediately below are for a simple, glued-on spine replacement. Following this, the variation for a hidden spine replacement is appended.

Materials required:

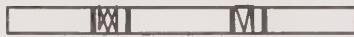
- your score, with the new hollow back and the old cover in place, clamped in the job backer
- a narrow strip of scrap paper and a pencil
- a piece of spine cloth (buckram or *imitation leather*) roughly cut at least two inches longer than the height of the score and the width of the spine plus three inches, grain running with the spine

- ruler, scissors, glue and small brush, binding knife, bone folder
 - two brass-edged book pressing boards, book press, or heavy weights
1. Use the scrap strip to take a measurement of the width of the spine as before (it will be a little wider, with the hollow back in place) but keep the strip in place when you have rubbed the pencil on both sides of the spine.

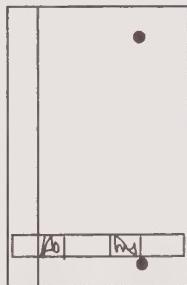
Holding the strip in place with one hand, use the pencil in the other to push one end of the strip down into the hinge area as snugly as possible. The pencil will blacken the strip all over the hinge area, but make sure that you rub a decisive mark along the outer edge of the board cover, making sure that the strip is still hugging the hinge closely.

It does not matter if the strip comes out looking messy, as long as clear marks show at the wide part of the spine and at the outer edge of the cover board, and the strip was snug against the hinge in between.

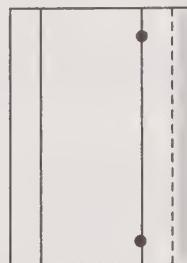
Repeat the process on the other side, without letting the strip shift on the spine. If the strip does move, it may be possible to realign it using the marks you made on the sides of the spine. There is no better way to get a good measurement of width needed to cover the hinge, as long as this step is done correctly.



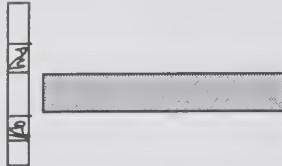
2. Measure the height of the board cover of your score and trim your spine cloth to a rectangle the height of the score cover + $1\frac{1}{4}$ " and a width about 3" greater than the width of the spine of the score (you will trim the width in the next step; now you just want squared corners and the correct height).
3. Draw a pencil line running along one long edge of the newly cut spine cloth, $\frac{5}{8}$ " from the edge. Lay your marked scrap strip along one narrow end of the spine cloth with one of the outside pencil marks (from the edge of one cover of the score) along the $\frac{5}{8}$ " line. Mark the two outside marks from the paper onto the cloth with a pencil. Lay the scrap strip on the other end of the spine cloth, with one outside mark $\frac{5}{8}$ " from the same edge, and mark the cloth at that end, too.



4. Draw a line connecting the pencil marks that define the width of the spine + hinge area. Trim the cloth $\frac{5}{8}$ " out from the new line. The cutting line is shown dotted in the figure below, and the shaded area is scrap.



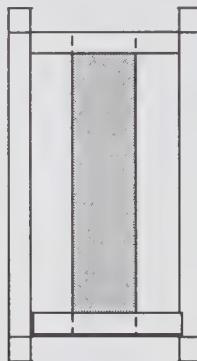
5. Draw lines in pencil $\frac{5}{8}$ " from the top and bottom of the spine cloth, so that your spine cloth has pencil lines running along all four sides, $\frac{5}{8}$ " from each edge. (See the figure at step 7.)
6. Cut a piece of 0.010 tan board to the length of the score's cover boards and the width of the score's spine (not the whole width of the spine + hinge) taken from the scrap strip.



7. Glue the strip in place on the spine cloth as shown. It should be placed using the scrap strip as a guide.



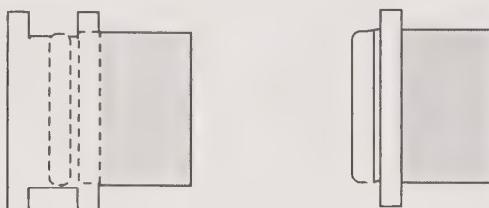
8. Cut along the lines from the narrow ends to your $\frac{5}{8}$ " marks with scissors. Apply glue to the center flap thus created and glue it down, leaving $\frac{5}{8}$ " x $\frac{5}{8}$ " tabs on either side.



9. Take your score out of the job backer and use a binding knife to pull the bar code away from the hinge area if necessary; you need $\frac{5}{8}$ " clear to accommodate the new spine covering.
10. Do not apply glue yet. Using your fingers, curve the new spine cover over the spine of the score, squeezing the hinge area into the score's hinges (use a bone folder if the hinges are very tight) and checking that the fit is correct. The protruding edges of the side tabs should just coincide with the board edges of the score on each side. If the fit seems wrong, check your measurements and make a new spine cover if need be.



11. Assuming the fit is good, apply a thin layer of glue to the new spine cover, all except the tabs (do not worry if glue gets on them, it will simply dry there).
12. To glue the new spine cloth on the score, start by lining up one long edge along the edge of the score's cover so that the $\frac{5}{8}$ " tabs are aligned with the edges of the cover board along the spine. Use a bone folder to work the cloth into the hinge area on that side, then use your hand to curve the spine cover into place over the spine. Work the cloth into the hinge on the other side with a bone folder. The tabs should line up with the edges of the board cover on that side.



13. Place the score between the book boards, with the brass edges in the hinges on either side. Put the score and boards into a press with the *score* (not the boards) centered under the upper platen of the press, and tighten the press down hand tight. Some presses back off a little on their own, and others do not. Do not tighten the ones that do not back off more than can be done easily by hand, but get the springy ones as tight as they will stay.

If you tighten the press too hard, you may break the hinge or crush the spine. Even if you are using a wooden press (either a vertical backer or a horizontal press), the same cautions apply.

14. The spine cover should be pulled tightly against the spine of the score.
15. After at least thirty minutes (preferably longer or overnight), remove the score from the press and glue the tabs and the bar code into place.
16. If you saved the old spine, remove as much cardboard from the back as you can, soaking it if necessary, to have as thin (and nonlaminated) a strip of cloth or paper as possible. Trim the rough edges off and glue it over the new spine. If you did not save the old spine, add a title. Directions for this are not given here; you may print one using a computer or use a heat press or other means at your disposal.

Spine Replacement with Hidden Cloth

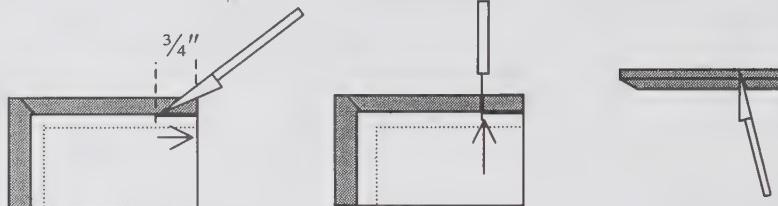
Sometimes you may wish to avoid covering an attractive old cover cloth with the new spine cover. The procedure for this involves altering both the spine cleaning and the covering process, as follows:

Materials required:

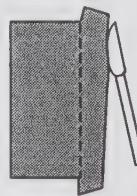
- all materials for spine cleaning, plus an x-acto knife with a no. 25 (curved) blade
- all materials for spine replacement, C-grade buckram if available

1. When first detaching the damaged spine from the cover boards, begin with the side that is most completely worn through and, if necessary, tear it gently the rest of the way so that one side is completely free. It will probably tear along the widest point of the spine of the book.

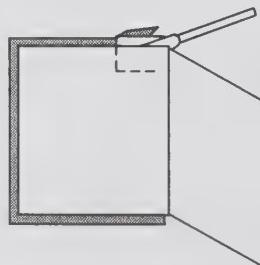
2. If the other side of the spine is also worn nearly through, tear it free in the same way. If it is still firmly attached, you may leave it attached, which is trickier to work with but will produce a more pleasing finished result. Otherwise, cut it carefully down the middle of the hinge with scissors, being careful to cut only the spine cover cloth, not the hinge cloth.
3. Remove any cover material from the spine and hinge areas that is attached underneath the cover boards (on the book side) but do not trim the edges of the cloth that covers the boards on the outside, or of the spine cloth that you have removed.
4. Remove any card stock or paper that adheres to the cloth cover removed from the spine. Depending on the exact condition of the cover, this may be done by pulling and scraping the material free dry, or by soaking the cover cloth until the attached material floats free and then drying the old spine cloth. For the purposes of the repair, it will be best to have the old spine cover be reduced to as thin a layer as possible; it will be glued back into place directly over the new spine cover.
5. Open the board cover on one side of the book and use an x-acto knife with no. 11 blade to cut through the cover cloth along the line of the pasted down endleaf from the spine edge of the board to about $\frac{3}{4}$ " in from the spine.



6. Cut through the cloth at right angles to the cut you have just made, to the top of the cover board and about halfway across the width of the board. Gently detach the small flap of cover cloth on the inside of the cover from the board. Cut and detach similar flaps at the head and tail of both inner covers.
7. Using the curved blade, gently detach the $\frac{3}{4}$ " area of the cover cloth along the entire length of each outer cover. Because you cut only halfway over the width of the cover board at the top and bottom, there may be stress wrinkles at those points. However, if you can avoid tearing the rest of the way through the cloth at the edges of the covers, the final repair will be less noticeable.



8. Open the score again, and use the curved blade to detach a small area of the pasted down flyleaf or *doublure* from each inner cover at head and tail. Loosen just enough to accommodate the tab of the new spine cover that you will be adding.



9. Most scores for which this procedure is appropriate will not need new rounding and backing, but it will be important to add a hollow back, as described above. With luck, this added material will be no more bulky than the material you removed from the old spine cover.
10. Prepare the new spine cover as described in the directions above, steps 1-8, but use C-grade buckram if you have it, in either a color that matches the book cover cloth or a neutral color such as gray, tan, or black.
11. Check the fit of the new spine cover as in step 10 of the spine replacement procedure. At the same time, check whether enough of the old cover is detached to accommodate all of the new material underneath it, and how well the worn or cut edges of the old spine cover and board covers can be made to mate over the new buckram. In some cases, leaving all the old cloth untrimmed will provide the most unobtrusive repair. Usually, however, it will look best to trim the edges of the old spine and board covers. This will allow more of the new spine cover material to show through but will look neater overall.
12. Glue the new spine cover into place as described in the directions above, but down against the bare cover boards underneath the loosened cover cloth. Do not press the score yet. Glue the tabs into place underneath the loosened endleaf paper, then dab a little glue on the tabs and glue the endleaf paper back into place.
13. Add a thin layer of glue to the old board cover cloth and glue it back in place over the new spine cloth. Be very sparing with glue overall but make sure that the very outer edges of the cloth do have glue on them, so that they will be less likely to fray away from the repair.
14. Glue the old spine cloth back into place as well. If the cloth edges were left untrimmed, try to mate them as well as possible.
15. Allow the score to dry in a book press as described in step 13 of the spine replacement procedure. In this case, all of the gluing is completed before the score is dried so that the old and new cloth will be pressed and dried together at once.

Cover Preparation for Recased Scores

Materials required:

- the score to be bound, with hollow back in place
- pencil, ruler, scissors, scrap paper strip
- *Davey board* (see glossary for weight) and board shear, or the original cover boards
- heavyweight white paper
- 0.010 card stock
- glue and brushes, scrap sheets
- dividers

Take Measurements

If you have a board cutter and will be measuring and cutting new board, follow all of the steps below. However, an alternative to the measurement method below is to take the measurements from the old boards, as long as you can determine their original dimensions. You will still need to take the hinge measurement described in steps 3-4; after that, proceed to step 7. If the original cover boards will be reused in rebinding the score, see the Variation immediately following this procedure.

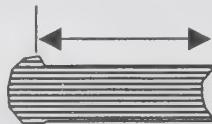
- Measure the height of the text block. There is traditionally a $\frac{1}{8}$ " margin of cover around the edges of the text block on all of the open edges of the score, to protect the edges of the pages. Therefore, the formula for determining the height of the cover is:

$$H = \text{height of text block} + \frac{1}{4}" \text{ (giving the } \frac{1}{8}" \text{ top and bottom margins)}$$

- Meanwhile the hinge between the board cover and the spine of the book takes up about $\frac{1}{4}$ " of space. Thus the formula for the width is:

$$W = \text{width of text block} - \frac{1}{8}" \text{ (this gives } \frac{1}{8}" \text{ side margin} - \frac{1}{4}" \text{ space for the hinge)}$$

Traditionally, **W** is measured from the highest point of the shoulder to the outside edge of the pages, and $\frac{1}{8}$ " is *subtracted* (not added). This allows $\frac{1}{4}$ " hinge area and $\frac{1}{8}$ " outer cover margin.

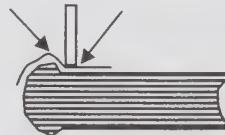


This method of measurement is most appropriate when scores are being bound for the first time, using similar materials and techniques so that the size of the hinge is relatively uniform. Because the depth of the shoulder and hinge area will vary more greatly on repaired scores than on newly bound ones, it may work better to use the following alternate technique:

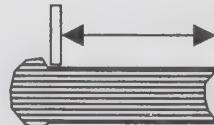
- Place a thin strip of paper (like that used to measure the spine width for the hollow back) over the shoulder of the score on one side. Use the side of a pencil to mark the widest point of the shoulder, as before, but keep the strip in place.



- Stand a piece of board scrap of the weight you will use for the cover against the shoulder of the score. Take care that it is perpendicular to the pages of the score and that the paper strip is snug to the shoulder of the score (a space is shown in the figure only for clarity) and mark a line on the strip along the outer edge of the board scrap. This will show the correct width of the hinge, which will be needed later.



- Measure precisely from the board scrap to the outer edge of the top page of the book block, then *add* (do not subtract this time!) $\frac{1}{8}"$ for the overlap, rounding up to the nearest $\frac{1}{8}"$. This will be the **W** measurement to use.



6. Save the paper scrap with the hinge width measurement for use in step 11. If the shoulders of the score look similar, the same measurements can be used for both covers; if there are obvious differences (which may be the case if the score was poorly bound in the first place) then take measurements for both sides.

This method is cumbersome but is more likely to produce a perfectly fitting hinge regardless of the size of the score. Because the measurements are so fine, personal variations of technique throughout the process of cover preparation make a great difference in the final fit of the cover; it may take practice to produce a perfectly fitting cover.

Cut and Glue Cover Foundation

7. Cut two pieces of Davey board to the **H** and **W** measurements determined as above or from the original boards, making sure that the grain runs along the spine.
8. Using another narrow paper scrap, measure the width of the spine with the pencil rubbing technique used for the hollow back above. Call this measurement "**S**."

If you have just finished putting on a hollow back, do not use the spine measurement you made for the hollow back. The hollow back itself will add to the width of the spine. Make a new measurement.

9. Cut a piece of 0.010 card stock **H** x **S**. Make sure the grain runs along the length (**H**). Use the scrap from step 8 to mark **S** with a pencil directly on the card stock, rather than trying to remeasure with a ruler.

If the **S** is very wide, more than 2", you may wish to use 0.020 card stock.

10. Cut a piece of heavy white paper **H**- $\frac{1}{8}$ " x **S**+4". Make sure that the grain runs along the length (**H**).
11. Glue the card stock spine piece onto the white paper piece, centering it by eye. The paper should be slightly shorter than the spine cover.
12. Use the narrow spine scrap produced in steps 3-4 to mark the exact width of the hinge from the edges of the spine card at each corner. Use an awl rather than a pencil to make a hole, rather than a pencil mark, because it must be visible from the other side.



13. Turn the spine paper over so that the smooth paper side is on top. If you forget this step, you will have to tear your cover apart and cut new spine card and paper later!
14. Apply glue to the edge of one piece of cover board in a strip about one inch wide. Do not bother to measure. Attach the board to the spine paper so that the outside edge comes exactly to the marks you made with the awl. For a brief period before the glue dries, the board will slide over the paper and can be positioned. Make sure that the board just touches the edges of the holes at either end, and that the outer ends of the board are flush with the outer ends of the spine card (the connecting paper being slightly shorter).

Holding the whole assembly up to the light may make it easier to find the holes if they are partly obscured by glue. Make sure that once you have set the board, it does not slide again before the glue dries.



15. Repeat with the other piece of Davey board. Holding it up to the light will be more difficult because of the first board already in place, but it can be done if need be.
16. Check that the skeleton cover you have just made fits onto your text block with about $\frac{1}{8}$ " overlap on all outer sides. Curve the paper spine around the spine of the score, or it will seem too small.

If it does not fit, discard it and start over, grateful that you remembered to check before you put on the cloth.

Cut and Apply Cover Cloth

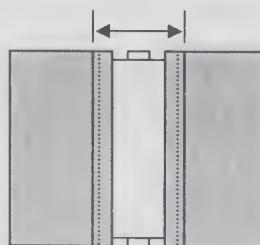
The easiest way to cut and apply cover cloth is in the “quarter leather” style, with separate pieces of material for the spine and the sides of the cover. Traditionally the spine is covered with leather, but the color and finish of the cloth is at the binder’s discretion. Real leather is both difficult to work with and often relatively short-lived, due to modern tanning processes; for the spine, acrylic-sized buckram is recommended, but regular buckram can also be used, or imitation leather.

Materials required:

- the skeleton cover made above
- pencil, ruler, scrap paper
- cloth for the spine and cover
- scissors, board shear or paper cutter
- glue, scrap paper, bone folder

1. Decide how much you want the spine cover cloth to overlap the front and back covers of the score. It is easiest to use a 1" or $1\frac{1}{2}$ " overlap, using more for a larger score. The traditional overlap is one-sixth of the cover surface, but most people prefer a little more than that.
2. To allow $\frac{1}{4}$ " for the spine cloth and cover cloth to overlap each other, measure from the spine edge of each cover board the amount of your chosen overlap width + $\frac{1}{4}$ ", and mark this distance with a pencil line down each cover board from top to bottom.

The dotted lines in the figure below show where the edge of the cover cloth will be; this is what will show on the finished cover, but no line is actually drawn there now. The arrow shows the measurement of **W** for the spine cloth.



3. Measure the distance between the two lines, across the spine of the cover. This will be the width (**W**) of your spine cover cloth.
4. The traditional amount by which the cover cloth overlaps the board on the inside is $\frac{5}{8}$ ". Thus the height (**H**) of the spine cloth will be your score cover board height measurement + $1\frac{1}{4}$ ", allowing for a $\frac{5}{8}$ " overlap at the top and bottom.

spine **H** = height of board cover + $1\frac{1}{4}$ "

spine **W** = width between lines on cover from step 2

Write these measurements on the paper covering the spine strip of the cover skeleton.

5. The cloth for the rest of the cover will be the same height as the spine cloth, since the overlap is the same. Its width is based on the same lines drawn in step 2, with $\frac{1}{4}$ " overlap on the pencil-line end and $\frac{5}{8}$ " overlap at the outside edge, for a total overlap of $\frac{7}{8}$ ".

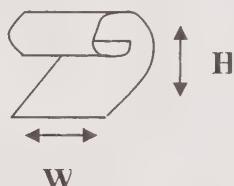
cover cloth **H** = spine cloth length

cover cloth **W** = pencil line to outside edge + $\frac{7}{8}$ "

Write these measurements on the cover board.

6. Cut pieces of your chosen spine and cover cloth with scissors to roughly the size you want (a little larger, so they can be trimmed to the exact size).

Make sure the grain runs along the spine of the score. On most rolls of cloth, the grain runs the length of the roll, so the curl is against the grain and **H** is normally cut along the length of the roll, **W** along the width of the roll.



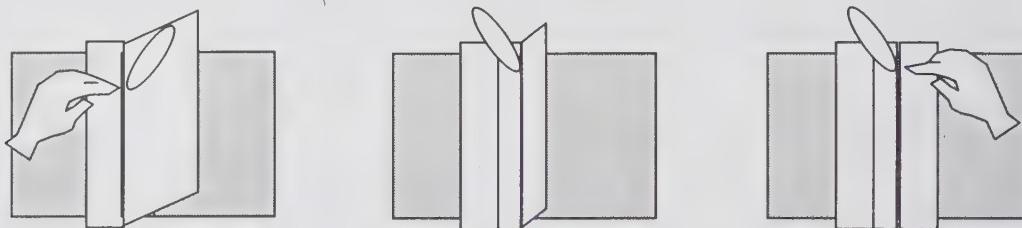
7. Roll the rough-cut pieces backwards to work out some of the curl. With acrylic-sized cloth you may also pull the piece over a table edge against the curl, which is quicker and more effective, but this might scratch the sizing of starch-filled cloth.
8. Trim the pieces to the measurements recorded on your cover, using either the board shear or a knife and ruler, whichever you prefer. Lay the cover, board side up with the pencil lines showing, on the work surface, with a piece of scrap next to it.
9. Roll the trimmed spine cloth backwards again, since it tends to curl more when glue makes it wet.
10. Lay out the spine cloth on the piece of scrap next to the cover and apply a thin layer of glue with the large glue brush.

To glue a relatively large area like this, begin with a sufficient amount of glue on the brush for the whole job (practice will show how much this is). Hold the cloth down tightly on the scrap paper with the fingers of one hand and with the other smear an oval blob of glue with the brush in the center of the cloth. Work

outward from the oval toward the edges of the cloth. Once glue has been brushed beyond the edge of the cloth, it is important to clamp hard with the hand holding the cloth, to prevent it from shifting and getting glued on the front. You must work quickly so that the glue does not dry and because the cloth will begin to curl as the damp glued side begins to swell.

11. Lay one edge of the spine cover cloth along one of the pencil lines, with $\frac{5}{8}$ " overlap at the top and bottom of the cover boards.
12. Press the cloth into place along the edge of the cover board (*not* in the center of the spine) with your fingers, then use a bone folder to work the cloth into the corner of the edge of the board on that side of the spine.

It is best to work with the bone folder in one hand running in the “ditch” below the edge of the board while the other hand smoothes the cloth out on top of the board to prevent wrinkles or bubbles.



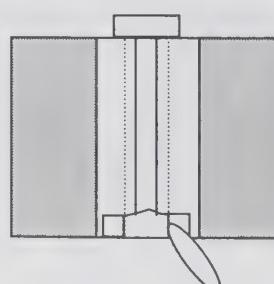
13. Once one side is thoroughly worked in and snug to the board, press the cloth over the center of the spine. Work the cloth into the angle of the other board edge with the bone folder, then press the far edge of the cover cloth flat onto the other board. Because of the material worked in, the spine covering may not quite reach out to the pencil lines you have made on the other side; this is fine, as long as the difference is no more than $\frac{1}{8}$ ".

This whole operation can be done quickly, with practice, so that the top and bottom overlaps can be folded down and worked in before the glue dries (see below).

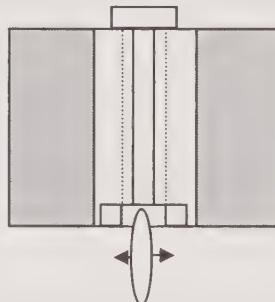
Variation for Centering the Title

You may also do this step by laying the center of the spine covering along the center of the spine. Then work the cloth into the edges of the board, one at a time, as in step 12, being extra careful to smooth wrinkles or bubbles out on top of the boards while working the cloth into the edges. This method allows you to center a spine cloth that already has a title on it.⁹

14. As soon as you are satisfied that the cloth is worked into the edges of the board, flip the cover over and turn up the overlapping edges at each end. If you have not been quick enough, the glue may have dried on the overlapping tabs. Brush on a little more.
15. Because of the material worked into the board edge corners on the other side, there will be extra material to work in on this side as well. First turn over the outer edges of the tab at one end, pull them tight around the end of the board, and flatten them down on the inner side, leaving a slight bubble of material over the spine cover.

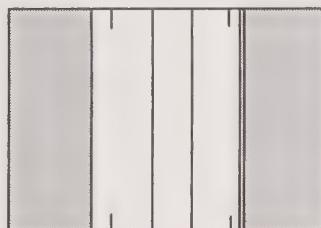


16. Once the edges on the board are thoroughly flattened down, flatten down the center of the cloth on the center of the spine and work the rest of the material into the edges of the board on either side, as you did on the other side. It is usually possible to work in all the cloth, but sometimes wrinkles will show on the spine at the edges of the board.



As soon as the first end is worked down flat, go to the other end and repeat the process.

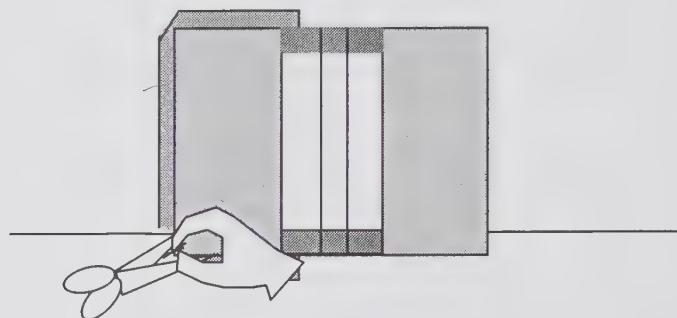
17. Check that the cloth is not rolling up or pulling away from the board, which may happen with acrylic-sized cloth. Keep flattening it and working it in with the bone folder if necessary, until it is thoroughly subdued.
18. Make marks at the top and bottom of the score on either side of the spine cover, showing where you originally decided to have the board cover overlap the spine cover. If the pencil lines still show, measure in $\frac{1}{4}$ " from them, as on the right below. If a pencil line is covered by the spine cloth, measure the distance that you originally decided to have the spine cover show out from the spine edge of the board, which should be clearly defined if the material is worked in properly.



19. Set the cover to one side in easy reach, set up a scrap sheet and apply a thin layer of glue to one of the buckram pieces. Start from the center, work quickly, and beware of curling, as before.
20. Quickly pick up the buckram piece, discard the scrap, and move the cover to the center of the work area, with one board end facing you.
21. Line up one long edge with the pencil marks at either end of the spine covering, with $\frac{5}{8}$ " overlapping at the head and tail of the score. Use the least gluey edge, if either has glue showing on the outside due to accidental shifting.



22. Once the edge is in place, briefly flatten down the rest of the sheet and turn the cover over. Do not spend time on the top side now, except to be sure the cloth is not bubbled.
23. Let one or both corners, which should have $\frac{5}{8}$ " overlap on each side, stick out over the edge of your worktable.
24. Pinch the overlap of one corner between finger and thumb, and cut off the pinched section with scissors. Start the cut a little bit, about $\frac{1}{16}$ " or a little less, out from the corner of the board, so that there is a little overlap at the corner. The result should be a diagonal cut across the corner, a little bit beyond the corner of the board; the pinching technique protects the blades of the scissors from glue. Pinch and cut the other corner similarly.

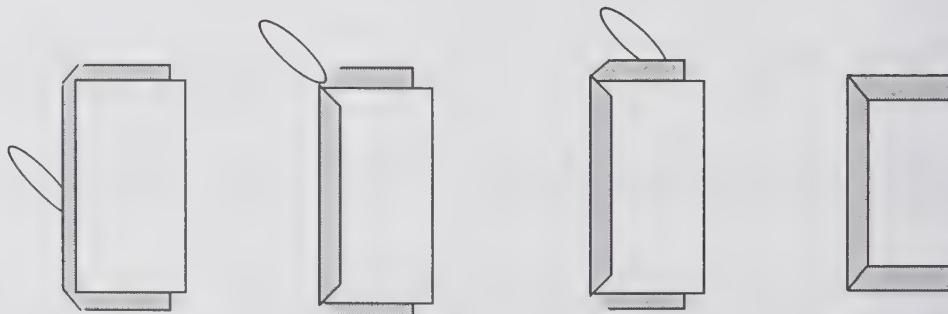


25. Move the score all the way on to the work table and crease the long edge of overlap up from the bottom with your bone folder, so that when you fold it over the edge will be crisp and even.

Fold the edge over and flatten it down. You may use either your fingers or the bone folder to flatten it, but beware of wrinkling by flattening too fast if you use the bone folder.

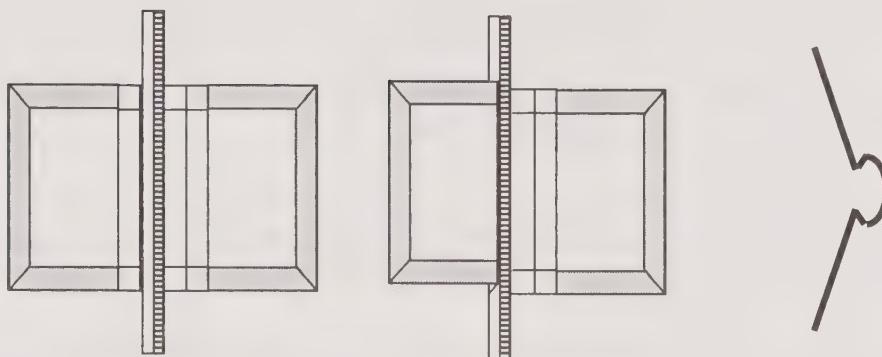
26. Turn the score to work on one of the end edges. Use the bone folder to tuck and flatten down the tiny fold made at the corner, then crease up the edge overlap from the bottom, as before, and fold over and flatten down the overlap.

Repeat with the other edge.



Repeat steps 19-26 with the other piece of buckram on the other side, then turn the cover over to admire your handiwork. This is one of the more satisfying moments to be had in the bindery, since the cover always looks startlingly professional.

27. Lay a ruler along each side of the spine on the cover and fold the hinge over the ruler so that the hinge area of the cover is defined, then bend the spine slightly so that it will fit the rounded contour of the back of the book block. See illustration next page.

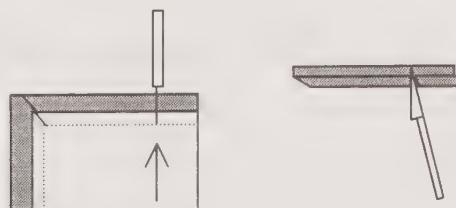


28. Set the score in its cover to double check the fit.

Variation: Using the Original Cover Boards

If you are using the old boards but not the original cover cloth, remove the old cloth and paper carefully, trying to keep the board surface as smooth as possible in the process. If the paper on the inner covers is relatively smooth, you may leave it in place; you will cover it with a new layer of paper later. If you wish to keep the old cover cloth, you will still need to use new cloth in the spine area, though you may save the old spine covering to glue over it. If you plan to do this, remove as much of the old card stock and other spine cover material from the inside of the old spine cloth.

- Begin with step 3 of the measurement procedure, page 110. At step 4, do not use the board scrap. Instead, set the cover on the book with the margins as desired and mark the placement of the spine edge of the cover on the scrap strip. Skip to step 7.
- At step 7 you will, of course, be using the original cover boards.
- At step 9, **H** is the height of the board.
- At step 12, if you are using the original cloth as well as the boards, trim the edges of white paper that extend beyond the awl holes to $\frac{1}{8}$ ".
- At step 13, If you are using the original cover boards and keeping the original board cloth as well, cut the inner overlap of the cover cloth free of the cover, then free an area $\frac{1}{8}$ " wide along the outside spine edge of the cover. This is the same procedure as in steps 5-7 for spine replacement with hidden cloth, page 108, except that instead of cutting through the cloth at the edge of the pasted paper end sheet, cut through any remaining paper to free the entire width of the cloth overlap. You will be adding a new layer of paper over whatever is left of the original one.



- At step 14, apply the glue along $\frac{5}{8}$ " of the inner side of the spine edge of the cover.
- At step 16, if the cover does not fit, strip the paper off carefully, to leave the board as smooth as possible, before trying again.
- Skip step 1 of the Cover Cloth procedure. At step 3, measure from one edge of the area of board exposed (at step 13 above) to the opposite edge on the other cover, using the illustration to step 2 of the cover cloth procedure as a guide. Skip step 5; at step 6 you will be cutting only the piece for the spine cover.
- Skip steps 18-26. Instead, glue the raised cover cloth back down into place over the new spine cloth and the edges of the board. If you wish to glue the old spine cloth over the new, do so now. You will need to do step 27 to complete new restored cover.

Cover Attachment

Materials required:

- book block and its cover, both complete
- glue and brush
- *brass-edged book boards* and book press
- scrap paper, blotter paper
- ruler, heavy white paper

Glue Cover to Spine, Press in Shoulder

1. Brush a thin layer of glue onto the spine of the book block. Glue only the spine, not in the hinge area.
2. If you already have a title on the spine of the cover, make sure that the score and cover are oriented the same way, so that the title is not upside down to the text. The "head" should be marked on the book block.
3. Set the score in the cover and slide it into its best position, with $\frac{1}{8}$ " margin top and bottom, while the glue is still slippery.
4. Set the score between the brass-edged boards, with the brass edges biting into the hinge area between the shoulders of the score and the outer boards of the cover.

Center the score lengthwise in the boards and make sure that the spine of the cover fits snugly against the spine of the score.

5. Set the score in the press. Make sure that the score (not the boards) is centered under the platen of the press. The centering processes are to protect the platen of the press from shear damage where it is attached to the screw.

Make sure that the boards are exactly aligned one above the other; if the boards are slanted or twisted, the score will come out that way as well.



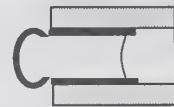
6. Tighten down the press hand tight, so that the pages of the score are squeezed together and the spine of the book block squeezed against the spine of the cover. Do not tighten more than hand tight but make sure that the press is fully tight if it tends to back off.

Leave the score for at least half an hour, then remove it from the press.

Glue Hinges

7. Remove the tape holding the scrap that protects the end pages on either side but leave the scrap in place.
8. For sewn scores, cut two new pieces of scrap, a few inches longer than the score is tall and at least 5" wide. For adhesive binds, cut two pieces of blotter paper, each a little taller and wider than the score, and skip to step 13.
9. Set one piece under the hinge cloth at one end of the score. If the mull is partly stuck down to the hinge material due to glue being pressed out from the spine, unstick it if possible, to be sure that they are glued thoroughly together in the next step.
10. Apply a thin layer of glue under the mull and press it down with the brush against the hinge material.
11. Apply glue to the entire cloth hinge area, a thin layer but enough to fill in the holes in the mull.
12. Remove the newly cut scrap sheet, leaving the original scrap piece still in place, and close the score over the hinge. Repeat steps 9-12 on the other hinge. Go to step 16.
13. For adhesive binds, brush glue very sparingly on the cover paper under the super and brush the super down flat.
14. Apply enough glue over the super to fill in the holes, then, with little or no glue added to the brush, apply glue with long, strong strokes outward from the super to the edges of the endleaf. It is not necessary to place a scrap sheet beneath the endleaf page because the glue application should be so sparing that no glue will be brushed over the edge of the endleaf.
15. Close the cover of the score over the glued endleaf and press down gently, then reopen the cover *just enough to slide a sheet of blotter paper between the endleaves*. If the cover is opened more than half an inch at this point, the pasted-down endleaf will be disturbed and will wrinkle. When the blotter paper is in place, reclose the cover and repeat steps 13-15 at the other end of the score.
16. Set the score back between book boards, but this time do not use the brass edges. If you use the same book boards, place the score on the opposite side, away from the brass, making sure that the edges still point inward so as not to be damaged by the press.

Center the score lengthwise between the boards as before, but *make sure the spine protrudes beyond the edge of the boards* so that it is not crushed when the score is pressed. If the spine is crushed, it may be irreparably damaged.



17. Make sure the score (not the boards) is centered under the platen of the press, as before. Press for at least half an hour. An adhesive bind is now finished.

Cut and Glue Doublures

18. The insides of the covers of sewn bindings are covered with separate pieces of heavy white paper called "doublures." The formula for the measurements of the doublures is as follows:

H = the height of the text block - $\frac{1}{8}$ "

W = a measurement from the hinge of the cover to the outer edge - $\frac{3}{8}$ "

Each doublure can thus be placed so that it does not show beyond the edges of the text block when the score is closed, allowing for a slight swelling of the doublure when the glue is applied.

19. Cut two pieces of heavy white paper to the measurements above, the grain running with the spine.
20. Apply a thin layer of glue to the first doublure.
21. Working quickly, pick it up by one edge and set that edge in place. The paper will almost certainly curl; be careful to prevent the front side from getting glue on it.

Most people prefer to set one long edge about $\frac{3}{16}$ " - $\frac{1}{4}$ " from the hinge, but it can also work to set a short edge $\frac{1}{8}$ " from the top or bottom, just inside the edge of the facing endleaf. Starting from the outer edge may not be practicable due to the spring of the hinge, but if it works, the centering is simpler since you can see easily how the corners of the doublure relate to the corners of the board. Make sure that only the first edge touches the paper.

22. When the first edge is set so that the doublure appears properly centered on all sides, carefully lay the rest down, working outward from the starting edge and pressing the paper into place with the flat of your palm to prevent the formation of bubbles or ripples.

If you started with the short edge, be aware that the grain will be working against you in terms of the paper lying down flat as you go. This disadvantage may be offset by the narrowness of the section being laid down. Try both ways and see which works best for you.

23. Once the doublure is flat in place, lay a piece of blotter paper over the text block and close the score.

Repeat steps 20-23 for the other doublure.

24. Press the score as illustrated at step 16 above, with the spine outside of the boards and not using the brass edge. Leave the score in the press for at least one hour.

The score is now finished, ready to be admired, then processed and/or placed on the appropriate shelf.

Notes

1. The definitions given in the text are rather loose: speaking more strictly, "conservation" in library usage denotes action taken to lengthen the life of a physical artifact, while "preservation" refers to safeguarding its intellectual content, usually by some means of analog or digital duplication. That is significantly different from replacing a brittle score, which might more strictly be termed "retrospective collection development." The full process of preservation with regard to music will be discussed in chapter 7. It is an unfortunate fact that the terms "conservation" and "preservation" are used in museums with meanings approximately reversed from library usage.

2. A wood-mounted drying screen may be purchased as a very expensive specialty product from a distributor of photo finishing supplies or made relatively inexpensively at a hardware store.

3. Note the following caution from Ellen McCrady, however: "A short length of Filmoplast, applied over the word "Filmoplast" in the Editor's Talas catalog sometime between 1975 and 1980, has already caused the printer's ink to blur and spread. This is a problem and a risk with all pressure-sensitive tapes, no matter how acid-free and stable they are. Another problem, even with tapes that age well without browning and becoming sticky, is that they may become very hard to remove in later years." *Abbey Newsletter*, vol. 6, no. 2, April 1982.

4. If there are parts, library binding will be more expensive but necessary; case bindings with pockets require commercial facilities.

5. There are also various "quick-fix" methods on the market for reattaching loose covers. These are not particularly recommended and they are not described here (directions should be available from the distributors), but some may work.

6. Some recommended sources on bookbinding are included in the bibliography.

7. The directions in Franz Zeier's book, *Books, Boxes and Portfolios*, trans. Ingrid Li (New York: Design Press, 1990), are the easiest to adapt to the binding approach used in this manual.

8. Library binders are, in fact, obliged by LBI standards to offer rounding and backing for volumes wider than $\frac{3}{4}$ " to those who request it, but the machine process does not work well on books with a spine width of less than about 1", and it is not recommended for most scores for that reason.

9. No procedure in this manual would result in the need to center the spine cover cloth. In libraries that have heat press title stamping machines, however, you will find that for scores with narrow spines it may work better to stamp the title onto the spine cloth first, rather than attempting to fit a large score cover with a narrow spine into the machine after it is made.

Commercial Conservation and Preservation

A variety of conservation and preservation treatments may be outsourced to commercial organizations that can carry them out more cost effectively than an in-house unit. The most familiar of these is case binding by library binders, but deacidification and a variety of preservation treatments are also routinely performed by specialized companies. Shipments to these companies involve many common factors—item treatment slips, shipment manifests and invoicing, accounting and quality control procedures, troubleshooting communications, and, in some cases, catalog annotations. Meanwhile, each also has its peculiar requirements, including selection procedures and item preparation. In each case, there are details in which treatment of musical scores will be different from that of books, and these are discussed in this chapter. For many music libraries or library departments, it may be useful to develop an in-house database to handle tracking of individual items. Depending on the software chosen and staff expertise, the database may also be used to produce treatment slips tailored to the various vendors involved, which can both streamline the preparation process and cut down on copying errors.

Commercial Library Binding

Signature-bound scores that need recasing or rebinding and whose paper survives the double-fold test twice can usually be entrusted to a commercial library binder.¹ Any conservation treatment (page repairs, etc.) should be completed before scores are sent for rebinding, so that they are sturdy enough to withstand the machine binding process without further damage and to prevent a conscientious binder from doing the repairs for you at a higher cost. Some conditions that lead to library rebinding of books may make scores unbindable, however. Regardless of their quality, double-fan bindings applied to older items are likely to fail within ten years with even moderate use, since the older paper tends to tear along the hinge joint, leaving the outer layer of paper still adhering to the glue. Therefore, older case-bound items that were previously oversewn, adhesive bound, or side sewn/stapled, must be considered candidates for replacement or reformatting rather than rebinding even if they survive the double-fold test.

The different types of binding offered by library binders vary somewhat both in exact procedure and in terminology, but the basic options are described below. For a library that has a satisfactory relationship with its binder, instituting any changes in binding style suggested in this chapter should be relatively simple. However, the changes in the library binding economy that have been noted with dismay by some librarians have had a disproportionate effect on music binding.² As binding has become more price competitive, quality components naturally suffer, and perhaps the chief of these is the retention of qualified production line staff. The people who do a really great job in library binding tend to find that they can get better jobs elsewhere or go into business for themselves. This means that the people who actually carry out and, in many cases, even supervise the binding steps tend to be less experienced than their counterparts were ten or twenty years ago. They possess less of a knowledge base on which to make judgments and are less able or willing to take direction from customers. This is the case even with good and well-established companies, simply because of the economics involved.

The onus of having music scores bound appropriately and properly, therefore, falls increasingly on librarians. Library binders, particularly members of the Library Binding Institute (LBI), which promulgates a

very helpful set of standards for library bindings, can and should be trusted to determine and carry out the most appropriate binding treatment for most materials. They need more monitoring than in years past, however, and in some situations need additional advice. In order to assume this responsibility, librarians, and especially music librarians, need to become more knowledgeable about binding styles and techniques than they have been in the past. Because even LBI binders use a variety of different procedures and describe them using different terminology, the lists that follow may not apply precisely to every library binder, but they should offer a basis for communication.

Any library binder will probably be willing to fill specific requests, such as having special pocket constructions, as long as they will fit into the established work flow. Binders are usually very glad to receive customer input. Requests that are very inexpensive and easy to implement may be added to their regular work flow as an added attraction, and others may be added for an extra charge, which will be justified by the lengthened life of the binding. Either way, the binder gets a satisfied customer. Requests that will not fit easily into the work flow are not so likely to be filled to everyone's satisfaction, of course, for the reasons of staff turnover noted above. The binder will not want added trouble and the library will not want to have to be continually alert for lapses. In any case, if changes in routine are added, be prepared to follow up as needed for several shipments to make sure that new instructions are correctly understood and added to standing orders. If bindery shipments are sent through another library, the problem will be compounded.

Leaf Attachment Terminology

Oversewing

In this method of attaching loose leaves, the book block is divided into thin sections and each section is sewn through the side along the spine in something like a whip stitch, about $\frac{1}{4}$ " in from the edge. The sections are then sewn together a few at a time, to produce a score that is extremely durable and somewhat flexible but will not stay open on a stand. Therefore, this method should not be used on music scores. For books the limitation on opening is less of an issue.

Side Sewing/Stab Sewing

These sewing methods involve sewing straight through the entire book block and have effects similar to that of oversewing but offer even less openability.

Sewing through the Fold by Hand

(Bench Sew, Saddle Sew)

The term "bench sew" derives from the practice of hand sewing books at a bookbinder's bench. It can be presumed to indicate sewing through the folds of multiple signatures one at a time, that being the old standard method of hand binding. It would not by itself indicate whether tapes or cords are used to support the sewing along the spine; either is acceptable. The term "Singer saddle sew" presumably derives from machine sewing (through the fold of a pamphlet) on a particular machine that has a saddle over which the pamphlet is laid, but it is now also used for hand sewing in stitches along the spine of a pamphlet as well. It should, but may not, be differentiated from the method of sewing described for pamphlets in this manual, which may also be used as a hand process by commercial binders. Saddle sewing by machine is preferable.

Sewing through the Fold by Machine

(Cleat Sew, National Sew, Drill National Sew, Smyth National Sew, Singer Saddle Sew)

"Cleat sew" is sometimes used to refer to notches into which cords are recessed, over which the sewing thread passes. On the other hand, it more commonly refers to a type of bind combining adhesive and oversewing in which "cleats" are cut into the spine after the folds are cut off and a special sewing is used along

adhesive.³ The former is acceptable for music, the latter is not. "National sew" and "Smyth sew" refer to sewing through the fold, with tapes or cords (usually cords in machine sewing) and with or without pre-drilling of the holes before the needle enters. "Smyth sewing" involves adding endleaves as a separate signature sewn to the text block, while in "National sewing" the end leaf that is pasted down to the cover is tipped around the back of the first signature of the book block before the signatures are sewn together. The former is usually used for monographs and is preferable for scores; the latter for periodicals, which tend to have heavier signatures. "Singer saddle sew" was described above; binders still use Singer sewing machines.

Double-fan Adhesive Binding

(Adhesive Bind, Notch Adhesive Bind, Ultrabind)

"Double-fan" adhesive binding in general refers to a method of glue application for binding single sheets in which the book block is fanned one way and then the other while glue is applied, so that each page is "tipped" to its neighbors by about $\frac{1}{64}$ " or a little more. Double-fan adhesive binding is much stronger than the "perfect" type adhesive binding familiar from crackle-backed, leaf-losing paperbacks and is acceptable for scores when creating signatures is not feasible. Occasionally, items come back with bindings failing (groups of pages loose) due to improper application, however—usually because the glue was applied too thickly and/or with insufficient fanning. Depending on the size of the book and the type of paper, the spine may be notched (little triangular cuts made along the spine to increase the surface area to which the glue is applied) or "ultrabound" (notched before gluing and reinforced with an elastic cloth afterward).⁴

Recasing

(Oversew Recase, Recase Sew Through Fold, Recase Whipstitch)

"Recasing" in general refers to preserving the original sewing while adding a new cover and endleaves, (which are added, as well, with all library binding processes). "Oversew," "Sew through fold," and "Whipstitch" refer to the means by which the endleaves and hinges are attached to the book block.

Other Procedures

Rounding and Backing

The traditional shape of a book has a slightly curved fore edge and spine, "shoulders" wider than the rest of the book block, and a sharply narrowed hinge area between the shoulder and the edge of the cover boards. This shape is produced by pounding all along the finished spine of the book with a hammer, first to produce the curved spine, then (with the book set into a vertical press, with about $\frac{1}{8}$ " to $\frac{3}{16}$ " of the spine exposed) to produce the mushroom shoulder. Library binders do this with a machine, which is less flexible than a human artisan and, therefore, cannot be used on recased books or those with a spine narrower than about $\frac{3}{4}$ ". Rounding and backing by machine is also not recommended for use on older books with acid-damaged paper, even if they are not yet brittle. Library binders will not use the procedure nowadays unless you specifically insist on it, which is probably not worth the bother except for double-fan binds more than about 1" thick, where it helps support the page attachment.

Flat Back Wide Hinge

Some version of this may be offered for large, thin scores. As its name indicates, this procedure involves no rounding or backing (impossible for the narrow spine) but a wider than usual hinge area between the spine and the inner edge of the cover board that accommodates special drill-reinforced end papers and also spreads the hinge strain over a larger area. It can produce a precarious look on opening but is no less sturdy than simply leaving the book unbacked and does permit thin books to open more fully with less strain on the spine.

Binding of Parts

LBI binders will saddle-sew pamphlet parts into either buckram covers or paper with buckram spine covering. Ask how your binder deals with loose-leaf parts; they do not come up that often in scores sent for case binding. If your binder is not prepared to guard them into signatures and sew them through the fold, it would be best to guard them in-house before sending them, since adhesive binding is not recommended for parts, which tend to receive heavier use than scores.

Pockets

The best treatment for parts is to have them bound with the score in a heavy buckram pocket at the front or back. Some binders can also produce specialized pockets, supported by foam worked into the covers, for media of all types. Note that they cannot round and back any item that has a pocket added. Note also that the easiest way of adding a pocket is to form a 4"-deep envelope and glue it directly to the cover. The glued-down back of this envelope is likely to catch on the music as it is being put into the pocket, especially if the fit is tight, with the result that the pocket may rip off. This can be avoided by gluing a piece of cloth or paper, like an extra doublure, to cover the area from the inner edge of the cover board to overlap the edge of the pocket by about an inch. It is worth asking your binder to do so if they do not already. Finally, some binders try to fit pockets as tightly as possible around the material contained, presumably to keep it from falling out and being lost. In fact, the risk of the music being damaged by tight-fitting pockets is much greater than the risk of it being lost from looser ones. If the binder sends music back with the parts laid carefully back to front in order to fit the pocket better, that is a bad sign—patrons will certainly not take that care. In many cases, asking that pockets be made to the height of the binder, not the height of the parts, should alleviate the problem of getting the parts in and out safely without adding a confusing element of judgment for the bindery staff. The endleaves are normally cut to the size of the cover, which will be larger than the score. The outer edges of the endleaves should be trimmed flush with the edges of the score; otherwise they will quickly become tattered and unsightly.

Slipcases

Very thick parts tend to fare better in hard covers. For quartet collections and similar items, ask for the parts to be bound in hard, rather than soft, covers and placed in a slip case or pocket binder (a case-bound version of the wide spine pocket binder described in chapter 3). Library binders tend to offer one or the other; either works fine.

Spine Titles

LBI standards include hotfoil stamping, rather than printed paper titles, since the latter are much less durable. In any case, several lines or linear inches of author/title are included in the cost of the binding; additional title lines and call numbers cost extra.

Binding Selection for Music

The first step in preparing a commercial shipment is to divide the group of items being sent into piles by desired binding style. The items in the piles should be boxed together, with an explanatory note, to help make sure they all get the desired treatment. An intelligent and experienced book binder, given standing instructions concerning the special needs of music, can make a better decision regarding individual items, based on their particular qualities, than a librarian can. However, given the rapid turnover of bindery personnel, you cannot depend on having an experienced binder ever see your books.⁵ Commercial binderies normally require that scores, books, and periodicals be packaged separately since the work flows, especially for periodicals, are different. Sending different subtypes of binds in separate boxes will make it easier for these to be processed as

job lots as well. Differentiating the shipment into the following groups of material and labeling the separate boxes with a note laid over the top item should help to ensure that they are all bound appropriately. It will be important to find out from your binder, or from the library department that deals with the binder, what binding styles they offer for each group and what particular terminology or coding should be used.

Sew or Recase

Scores with signatures and without parts may be entrusted to the binder for the decision whether to add new sewing or simply a new case and endleaves. The latter process actually involves more delicate work for the binder and is often more expensive, but it is generally best to keep the original sewing. For items that will receive very heavy use, it may be best to replace the original sewing (which will usually have been done with a light thread for a more compact spine). If this is the case, separate out any items for which this request is made and package them together for shipment, since this request will be "counterintuitive" for bindery personnel.

Sew or Recase with Parts in Pocket

It is easiest to have all parts covered with heavy paper in order to avoid any questions about which should be covered and which should not. Most binders also offer bookcloth coverings. For scores that will receive very heavy use, these might be worth the extra expense but, on the whole, the heavy paper will be sufficient, especially because the spine is normally reinforced with cloth. Ask if saddle sewing, rather than pamphlet sewing, is offered for thick parts. Buckram pockets are probably to be preferred over Tyvek pockets for the heavier parts that usually accompany scores that require case binding. They are more expensive, however, and Tyvek in itself is acceptably durable. The problem is that the Tyvek pockets are usually constructed with a minimal amount of material and glued in place, making them vulnerable to ripping free from the cover with use. It may be worth getting samples and asking to have the pocket backing be cut wide enough to cover the entire cover board area, like a doublure; this may involve an additional charge.

Double-fan

Any books or scores that are adhesive bound or otherwise in single sheets on arrival should be adhesive bound, not sewn in any way. Some adhesive bound scores appear to be in signatures, having been "single-notch" bound. When you can find no thread at what appears to be the center of a signature but can see tiny notches in the paper along the spine, it is an adhesive bind.

Double-Fan, Round and Back

Rounding and backing (R&B) offers some additional protection to adhesive bound scores over 1" thick. If there are enough of these to make up a box, it is worth doing, with an explanatory label. If there are only a few in this size, ask for R&B on the binding ticket while boxing them with the thinner scores; the request may or may not be noticed, but it is not worth holding them back for a later shipment.

Cut off Holes and Double-Fan

Cutting the holes off items with perforated bindings is the standard practice for library binding, so these items can be boxed with other double fans, though it is still worth mentioning the matter on the binding ticket.

Do Not Cut off Holes; Double-Fan

This group is likely to have its instruction ignored by binders unless it is packaged separately and labeled clearly (or the holes impinge obviously into the text in the first few pages). There is no question that leaving holes in the hinge area is a procedure of last resort. Unfortunately, it is not as uncommon with music as it is with textbooks. For thin scores, consider the possibility of preservation photocopying (see chapter 7).

Double-Fan with Parts in Pocket

See the comments regarding pockets on sewn items. Note that case bindings with pockets cannot be rounded and backed, regardless of the width of the spine.

Slip Case, Pocket Case

Some binders offer slip cases, boxes that open along the spine, and some offer pocket cases, such as the wide-spine pocket binders in this manual, only constructed with book board and covered with bookcloth. Either is a good solution for keeping volumes together. If the slip case is offered, it may be a good idea to ask that the slip case NOT be titled, just the volumes themselves. This will ensure that the case must be shelved with the volume spines showing, which will help prevent—or at least highlight—loss or theft of the contents.

Media Cases

If your library keeps media with bound volumes, see what your bindery offers and whether it looks useful.

Score Preparation for Library Binding

As noted previously, most commercial binderies are equipped to do necessary conservation on scores that are sent for binding. However, it will be cheaper to have students or nonprofessional employees do the conservation in-house. Also, if by chance a problem goes unnoticed at the library binder, the score may end up damaged or poorly bound. Fortunately, there are only a few general problems to look for. The first and most obvious is page damage such as tears. The next, and by far the most prevalent, is older, weakened pages of materials slated to be rebound. Library rebinding of any item that does not pass the double-fold test twice is not recommended, but there may not be an alternative, and, in any case, there are many scores whose paper is reasonably sound but still needs attention before being rebound by machine. If the sewing is still sound on an older score, it can be sent for a recase without further attention. However, if the sewing is loose, the score must be resewn, which will involve separating the signatures. The old glue must be removed to make way for the new binding, but this process is likely to weaken the outer folio of each signature. In order to ensure a successful rebind, it will be best to separate all the signatures, remove the glue, and guard the outer folios on the outside with repair tape.⁶ The procedures from chapter 5 for spine cleaning and/or disbinding should be applied to older materials before they are sent for library binding.

One special case is that of certain periodicals that may require special care. Usually libraries prefer to have several volumes, such as a year's worth, rebound in a single case once a suitable group is collected. However, some periodicals are published with multiple thin signatures sewn through the fold into soft covers, and these cannot be simply recased with multiple volumes in a single cover. Instead, the only options available for rebinding several volumes into a single cover are either disbinding the separate volumes down to separate signatures and then sewing the all signatures of all the volumes one by one, or cutting off the spines and adhesive binding the whole multivolume block. Obviously, the latter course is much easier and will be preferred by the binder. For most periodicals this is acceptable, but there are a few that receive heavy use and are printed on glossy paper. *Early Music* is one such periodical in particular. Some of its volumes are actually single-notch adhesive bound, and the only alternative left for those volumes is adhesive rebinding. Unfortunately, this binding is likely to fail over the years, it cannot be replaced, and there is nothing anyone can do about it, except to keep tipping pages back in as they fall out. Other volumes, however, are sewn through the fold, and it is worth taking the time to disbind these volumes in-house before sending them to the library binder and asking the binder very specifically to retain the signatures.

Conservation

There are a number of different options for libraries that do not do conservation in-house. Library binders usually have conservation departments that do the types of repairs described in this manual. Many music libraries are attached to larger libraries that have in-house conservation departments (though often in another building or campus). Finally, paper and book conservation can be outsourced to a professional conservator. This manual does not include specific recommendations since library situations vary widely. A music librarian who does not have previous acquaintance with a conservator or conservation department can inquire for further information about book conservation through one of the websites cited in appendix B at the end of this manual. Because most conservators are accustomed to working with books rather than scores, the music librarian responsible for collection care should read carefully through the chapters on binding and conservation in order to communicate more clearly about the specific needs of music.

Deacidification

Most music produced between about 1850 and 1990 is made of paper manufactured from acidic wood pulp or sized with acidic compounds to make ink stick better, or that has produced acids over years of chemical degradation, or all of the above. That is why it turns brown and brittle. Because the large format of music makes it relatively expensive to produce, the paper chosen is often even cheaper than that used in books, except in the case of first editions or other luxury prints. It is not economically feasible at this time to try to deacidify all of the music published during the last 150 years, particularly since once a piece of paper has become brittle, current deacidification processes will not make it less brittle. Deacidification will only prevent an item from becoming more brittle due to acid deterioration. On the other hand, if a piece of music is acidic but relatively undamaged, deacidification will probably save the cost of replacing the item within the next fifty years. It is, therefore, worthwhile to develop a deacidification policy for music that can be applied easily both to scores already held by the library and those currently being accessioned and processed. The factors to be taken into account are as follows:

- The amount of acidic paper being produced is decreasing rapidly and most well-established music publishers from developed countries now use paper that meets ANSI standards for quality.
- Scores that come from less careful publishers or that were produced between about 1960 and about 1990 are likely to be acidic but are unlikely to be brittle.
- Scores produced before 1960 may be brittle; those from before 1950 almost certainly will be, regardless of the original quality of the paper in other respects.
- Deacidification is fairly costly, both in staff time and in money, but less than the purchase of most of the better editions of music. Sending larger lots for mass deacidification may cut the costs considerably.
- A *pH pen* provides an adequate test for acidity for the purpose of deciding if paper is acidic enough to be damaged over time.
- The most important damage done by acid occurs within the first fifty to 100 years. Once a sheet of paper has become brittle, in about that time, it may take centuries longer for it to deteriorate to the point of crumbling away, although some papers used for music will crumble much more quickly.
- Once acid damage has occurred, deacidification alone will not repair the item, though it will stop the deterioration.⁷
- There are three deacidification systems available for use by libraries. Aqueous deacidification can be used for treating unbound materials with fixed ink, including many pamphlet scores. Of the two nonaqueous methods used in the United States for bound books and those with ink that would run, Wei T'o is less expensive but more difficult to use because the material tends to clog the spray heads and requires a suction hood for maximum penetration of the paper. It is distributed for in-house use. Bookkeeper is more

expensive but easier to use in in-house spray installations and also available for outsourced mass deacidification. Both systems use magnesium compounds to effect the deacidification; the Bookkeeper spray tends to leave a noticeable velvety or even dusty residue of magnesium hydroxide on the treated paper.⁸

- There are several ways to use either nonaqueous system, depending on the amount of material to be treated. Aerosol cans or spray bottles can be used for treatment of a few items; an in-house spray installation can be purchased, allowing more consistent spraying of more material on a piecemeal basis; large lots of material can be sent out for mass deacidification, which is why the subject of deacidification is treated in this chapter rather than in chapter 5.

A suggested method of forming a music deacidification policy based on these considerations would be:

1. Test a sample of scores with a pH pen and double-fold test to see which are acidic and which are brittle. To see what proportion of newly arriving material is still acidic, test all incoming new music as it is processed over a certain period.⁹ (Presumably none will be old enough to be brittle except gifts.) Other possible samples could include scores that receive use during some period of time as they are turned in at circulation, scores that match particular criteria such as certain publishers, subject areas, etc., or some combination of criteria.
2. Use the results of the sample and the thinking that went into its choice to determine the magnitude of the problem that you wish to face. Because most library music is acidic, each library must decide what kinds of items it most wants to rescue. Candidates for deacidification could include newly received scores before they are damaged, scores currently owned by the library that would have a high replacement cost, those with a long expected library life, or particular types or groups of material on some other rationale, for example, monuments and collected works.
3. Decide how much staff time or money to invest annually in deacidification and whether to apply for grant money.
4. Refine the acidity/brittleness survey if necessary or use the results you have to select materials for treatment.

Mass deacidification is the most cost-effective approach, but if library resources are limited to saving only a small number of significant scores, aqueous deacidification, aerosol sprays or in-house installations can be used. Follow the directions that are supplied with the material.

Aqueous Deacidification

This process is undergoing something of a renaissance in the archival community but will probably be of limited use for music library purposes. For materials that can be separated into single sheets, it is recommended because soaking in water has added effects of strengthening and cleaning the paper. However, the deacidification solutions currently available are complicated to prepare; in-house, the job will be time consuming, and contracting out is expensive. The mixtures that do the best job of leaving an *alkaline reserve* consist of calcium or magnesium salts dissolved in carbonated water. Once the fizzy water goes flat, the salts fall out of solution. Not only is the mixture useless after that, but some conservators have found that papers dipped into a solution that is going flat pick up bigger particles of calcium or magnesium carbonate. These leave a gritty residue and may cause uneven darkening of the paper over the years. Two options are currently available. One is to use one of the available in-house methods. The other is to send pamphlets to archival conservators that do aqueous deacidification. Watch for breakthroughs in the storage and marketing of aqueous deacidification solutions, and for mass aqueous deacidification processes. These will mostly be directed toward archival use, since they are still for unbound papers. At this time, a mass process for aqueous deacidifi-

cation that includes steps for fixing inks and flattening the paper during drying is in active development in Europe.

Nonaqueous Deacidification

At present, the mass deacidification method most appropriate for library use is the Bookkeeper process offered by Preservation Technologies. Its method of deacidification uses particles of magnesium oxide (actually the compound that they form in the paper after they are introduced) as a neutralizing agent and buffer. Perfluoroalkane, described as a low-toxicity, non-CFC (not ozone-depleting) nonsolvent, is used as a carrier with a special surfactant. A study conducted in 1994 by the Library of Congress states in the main body that

it is by its nature "clean," introducing only very pure magnesium oxide into the paper and exposing the book to relatively unreactive fluids and surfactants. It also does not subject the books to "preconditioning" treatments which may risk incidental changes to the book materials or structure. The process as it exists today (in August 1993) also has the advantage of using materials which are not likely to become subject to environmental regulation ... No chemical reactions are necessary to produce the desired combination of ingredients in the paper, and consequently the treatment is unlikely to create an unexpected outcome due to poor process control. This treatment puts magnesium oxide into paper, and the only apparent variability in the treatment application is the quantity and distribution of the magnesium oxide deposited in the book.¹⁰

The idea behind the process is to saturate the material being treated with the mixture, then remove the carrier and surfactant by vacuum-assisted drying, leaving sub micron particles of magnesium oxide embedded in the paper fibers. While the process of applying the MgO particles is nonaqueous (otherwise it could not be used for bound materials), the actual deacidification takes place within the paper fibers over a period normally of twenty to thirty days after treatment and requires water vapor to complete. The relatively mobile water molecules form chemical bridges between the more fixed acid sites and alkaline particles. Paper by its nature holds moisture, and there is usually enough ambient water in the paper fibers to complete the process within a month or so. However, it must be noted that some papers, especially highly acidic ones, will take longer than this. During that period these materials are still acidic, and will not register as alkaline to a pH pen test, even though they also contain potentially alkaline particles. If returned materials feel velvety but still give yellow "acidic" results, you may do a five-minute test with wet litmus paper or try the pH pen test again, this time breathing on the paper to humidify it for a period of about a minute or so. Either test will show what will happen with humid conditioning. Ad hoc tests done on such materials have shown that the quantity of MgO is sufficient to balance the quantity of acid, once the hydrolyzation process is complete.¹¹ If the paper still registers as acidic after several months, especially in an area where atmospheric humidity is consistently low, it may help to place the materials in artificially humidified conditions (say, up to 50% humidity) for several weeks.

In 1995 Sibley Music Library (as a part of the University of Rochester library system) took part in a test of the Bookkeeper process along with libraries at Columbia University, New York University (NYU) and the State University of New York (SUNY) at Albany. The full results of that test are available from any of the participants. The pH of the items sent from Sibley averaged 4.5, and the return pH averaged 9.4. These results included measurements taken in the gutters of the items and in parts left in pockets during a standard Bookkeeper III processing in which bound items are clamped in an open position and agitated in the carrier solution. The measurements were also taken on a page that was washed thoroughly in water after treatment to remove any surface buffer residue. A velvety feel or chalky residue was felt on all treated surfaces. A woman who describes herself as normally very sensitive to allergens and irritants did three pH tests on each of 455 items returned and reported no irritant reaction from the residue. Two staff members at NYU reported headaches after handling returned books, however, and staff at SUNY Albany reported itchiness.

Some of the plastic-glazed covers and repair tapes came back feeling slightly tacky, and NYU staff noted that “the pages in some books had an evenly distributed, ‘translucent’ quality, similar to the effect that oil had on paper, although not as dramatic.”¹² The tackiness may have resulted from some reaction of the carrier with the plastic in the tape and cover glazes or may have involved some plastic reaction to the higher pH intentionally left by the treatment. The Library of Congress study noted that there is little information about long-term effects of pH higher than 9.5, though they conducted a variety of accelerated-aging tests themselves. Their conclusion was that high pH was, at any rate, less demonstrably damaging to paper than low pH. The chalkiness, according to Preservation Technologies, is caused by larger particles of magnesium oxide that cannot penetrate the surface of the paper but can and do stick to it. They are working on reducing the maximum size of the particles present in the solution.

Selection Criteria for Commercial Deacidification Treatment

Most commercial mass deacidification is grant funded, so that the selection of items for treatment will be a part of a carefully thought-out process, as is appropriate. In general, the suggestions given above may be followed. One particular note relating to mass treatment is that it usually involves movement of items in a bath of treatment solution, which can lead to damage of fragile paper or bindings. Once again, scores old enough to be brittle or nearly so are probably not good candidates for treatment. Also, the Bookkeeper spray, which is currently the most likely choice for mass deacidification, cannot penetrate clay-sized glossy paper, so glossy items such as periodicals cannot be included in mass shipments.

Preparation for Deacidification

Paper tear repairs and erasure should be completed before scores are sent out for deacidification, both so that the items are sturdy and self-contained when sent, and because the fine particulate used to neutralize the acid may interfere with glue adhesion. It is best to have all erasing, aqueous cleaning, and tape removal finished before doing tear repairs. Bookkeeper treatment of individual items, therefore, is generally best after all other necessary paper conservation has been completed. Mass deacidification may be a different matter, since it is usually supported by a grant and has to be completed within a time frame. If possible, of course, it is best to include funding for repairs in the grant proposal.

Other than the completion of repairs, no other preparation of materials is necessary. However, it will be cheaper to send pamphlet materials unbound and then bind them on return. Preservation Technologies provides shipping crates with directions for filling them. These crates will accommodate materials up to 19" x 17", and the occasional larger folio score may be packed separately, in consultation with the company. All materials will be removed from the boxes for treatment and then returned to them for transport back. Books and scores with sturdy covers, including pamphlets, will be clamped into holders in machines that agitate them gently in the carrier fluid with their leaves flapping free, which means that any that are brittle or nearly so will be vulnerable to damage. The staff at the plant will watch for these, but it is good to be aware of this while packing the material as well. Loose papers left between the pages are likely to be lost, but attached materials will probably stay attached. Parts in pockets are normally removed at the plant and treated separately. All unbound, soft-bound and quasi-brittle materials are treated either by agitation in holders designed for loose leaves or hand dipped in the solution, or sprayed with it. Media attachments should be removed before shipment.

Preservation Photocopying

The most cost-effective method of photocopying brittle materials is to utilize student or nonprofessional staff, having the copies bound by a library binder if they involve too many pages to form into single pamphlets. With a good photocopy machine and a conscientious and skilled worker, the results will even look as good as more expensive commercial facsimiles. However, photocopying long scores or books is a tedious business that most library employees will prefer to avoid after a certain amount of experience (materials that can be pamphlet-bound make better student projects). As a preservation activity, commercial photocopying is attractive to donors and grant sources, since the result is usually very satisfactory. This is especially true for music since other means of reproducing the item, including digitization, can only be intermediary to a score that can go on a music stand.

Selection criteria for preservation photocopying are discussed in chapter 7, but many shipments to commercial vendors do in fact involve grants or donations that are tied to particular selection interests. The process of developing a proposal to a donor or granting agency for a particular collection of interest is beyond the scope of this manual, though it is likely to be an important factor in selection for this particular commercial product. One recommended selection aid is subscribing to BRITTLE-L, an electronic mailing list developed and currently administered at University of Kansas (KU) by Brian Baird. List members exchange bibliographic information regarding titles that they plan to have commercially photocopied. Anyone who wants a copy of a book (it must either be out of copyright or the library must own a brittle copy to satisfy the rules of library use) can request one during the four-week period that it is listed before being sent out for duplication. The duplicate copies are less expensive than a one-off copy would be because of the labor saved in copying, and the in-house work of preparing the volume for copying is also saved. Even on the item that is sent, the preparation work is done at KU, no matter whose original is used, to ensure uniform high-quality results. The copying and binding are done by Bridgeport National Bindery, which does very good work. The other important advantage to the system is that the best among several copies can be chosen—or even collated together—to produce the best possible duplicate. The only drawback to the system as it is currently instituted is that, being a mailing list rather than a website, it draws on a somewhat limited group of libraries including very few music libraries. Also, processing copies through BRITTLE-L involves an extra period of at least a month while the titles are posted before the books are sent. Given the standard pace of preservation photocopying, this is usually not difficult to accommodate. The administrative address for the mailing list is found in appendix B. Mr. Baird notes that he is exploring means of providing a web interface with a wider distribution and specifically invites music libraries to form a subinterest group.

Preparation for Photocopy Shipment

Shipment preparation for preservation photocopying involves a number of important steps besides the usual packing, tracking, and accounting. You are essentially preparing a new edition—or at least a new printing from an existing plate. Everything should be done to make the new copy look as good as the original when new. First, count the pages to be sure none are missing. If a page is missing, it may be possible to order a replacement copy of that page through Interlibrary Loan. If no other institution holds the item, the decision to photocopy must be reviewed, both because of the missing material and because of the discovery of the uniqueness of the item. Next, erase all markings except for those needed by the library; these may be covered with a post-it unless the item is valuable. At the same time, make any repairs necessary for getting a clean copy, guarding with clear archival tape on one side only. Repair a tear only if it is through text. Tears in the margin will not show, and the original will receive little subsequent handling. For a small fee, most companies that do preservation photocopying will offer to cut the spine of the original (unless the item is valuable, in which case it will be photocopied “from bound” for a heftier fee). This is recommended, as it will ensure that no pages are lost in transit, and that the job is done by experienced handlers on adequate equipment, thus

minimizing the risk of loss of text from the inner margin. If you want the company to copy an item from bound, it is wise to say so in highlighted large letters on the treatment and packing slips, since they are accustomed to removing spines in most cases.

Processing of Return Shipment

Because the treatment is copying, and not just binding, three steps are important on the return of preservation photocopies. The first is collation to make sure that no pages were lost during the process. The second, usually but not always done by the vendor, is supplying a copyright statement that the copy is a duplicate and that it was prepared in accordance with copyright law. Using that phraseology allows the same statement to be applied to all volumes, whether they are in copyright and made under library use, or out of copyright. If the originals are routinely removed from circulation, that should be incorporated as part of the statement, since it is required for permission to copy under library use. The usual formulation is "This is a preservation photocopy made in accordance with U.S. copyright law. The original has been permanently withdrawn." This statement may either be attached to the binding as a printed label or stamped in the book block. The final step is the withdrawal of the original (perhaps to noncirculating storage) and the cataloging of the new copy.

Preservation Microfilm

Microfilm is the least expensive preservation option for scores that will be used for limited study purposes. Filming is also a much more gentle process physically than photocopying, since the images are shot from above. A glass plate may need to be placed on top of tightly bound materials that will not lie with the pages open, but it will not need to be pressed against the material as tightly. In any case, this is seldom necessary with musical scores. It may also be considered for items that the library plans or expects to make available in digital form, since it is simpler to scan a microfilm than a bound hard copy, and fragile originals, especially if disbound, should not be subjected to shipping and duplication more than once. As noted below in the paragraph on digitization, the two special qualities of printed music are the greater variation in size of standard scores compared to standard books and the relative grossness of the smallest necessary detail (compared to manuscripts, photographs, and pictorial engravings). Microfilming materials to be digitized minimizes the problems of the first characteristic at the digital end, while taking advantage (insofar as the digital copy will be the second generation) of the latter. It also helps libraries to avoid the ticklish issue of the preservation status of digital copies. While the technology of data migration is becoming sufficiently advanced that a relatively small investment of prior planning can prevent digital disasters of most sorts, having an analog backup copy is still a great comfort. For all of these reasons, microfilm is still a viable preservation strategy, although most scholars and musicians find it the least convenient format to use.

New microfilming normally involves three copies: the first generation camera negative, which the Research Libraries Group (RLG) terms a Master Negative if its production and storage adhere to RLG standards, a Printing Negative, and a positive Service Copy. The negative copies should be silver halide and preserved with a polysulfide treatment; outside of accident and use, these two films can be expected to last 500 years if RLG standards of production quality were followed. The Master Negative should be stored in a facility separate from the original material, if that is retained, and from the Printing Negative as a further precaution. The Service Copy may be on positive or negative, silver or diazo films (diazo copies are cheaper but more prone to deterioration). Because of the importance of all three copies to the preservation of the material they contain, libraries are specifically permitted to make three copies of copyrighted materials in their collections for preservation purposes. A full set of guidelines for the preparation of microfilms, including both bibliographic and technical standards, is available from RLG.¹³

Shipment Preparation for Preservation Microfilming

Because of the bibliographic information that must be filmed with each item, preparation for microfilm shipment tends to be more time consuming than that for other commercial processes. Collate, clean, and repair materials as you would for commercial photocopying, but do not cut the spine—that is one of the advantages of filming. Because filming is more likely to be reserved for rare materials, the cleaning and repair processes may also be more specialized—or may be omitted.

Once the scores are physically prepared, bibliographic data must be printed out, including a copy of the catalog record, a summary in large print (large enough to be read from the film without magnification), and notes regarding any irregularities in the copy being filmed. The latter include missing pages or mispaginations, and markings, especially if they are historically or culturally significant. Such useful items as a table of contents of *binders' collections* may also be added. This type of metadata will need to be collected for digital reformat as well, though it will be attached to the copy in a very different manner. The actual sheets of paper on which the data are printed, and which are inserted in the book or score to be filmed either at the front or at the appropriate pages, are called *targets*. A few sample targets are shown below:

DUBOIS, ROGER	PM 1123
SONATA OP.24	[187-?]
VAULT/M 263 .D82	
PRINTED MUSIC, 31.5x25 cm.	
SCORE AND PART, 17 pp. tot.	

PM 1172 P. 32 LEFT BLANK BY PRINTER; MUSIC IS UNINTERRUPTED	PM 1245 PLATE 12 IS IN COLOR IN THE ORIGINAL	PM 1103 VOLUME TWO
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Digitization

Digitization is not yet recognized as a preservation strategy. Its eventual acceptance as a preservation medium is almost inevitable because of its power to capture fine detail as fully as analog photography, and its ability to produce identical copies without loss of information over any number of generations. Currently, however, digital storage of information is much more expensive than that of copies on paper or film and involves many complex issues. Although the media of electronic storage tend to be much more prone to deterioration than archival-quality paper or microfilm, the concept of file maintenance by periodic migration of data to new media and even new formats of greater longevity has already made some inroads into that problem. In theory, digital copies made now can be maintained until a truly long-lasting medium and format has been achieved. In fact, the resources now available for planning and carrying out digital reformat projects include guidelines for

making such maintenance possible. For sound recordings, whose media tend to be less stable than archival paper and microfilm and which suffer the same problems of obsolescence of playback machinery, digital storage is already coming to rival analog for preservation as well as access purposes. For optical material, however, the fact remains that a data disk lost for fifty years will almost certainly not be readable, while a paper or microfilm copy mislaid for the same period will.

The expense involved in storing the large amounts of data needed to produce a digital image comparable to a good quality analog image presents another problem. While stored data can be reproduced without loss, compromises, sometimes severe, must still be made regarding the amount of data, and thereby the quality of the image stored. In addition, the expense of digital storage is ongoing. With regard to this problem, printed music is a much better candidate than many other types of material for which digitization may be considered. It normally involves only two-color tones, black and white, and can, in most cases, be printed fairly coarsely and still remain perfectly legible.¹⁴ This means that the amount of digital information needed to reproduce a page of printed music is less by orders of magnitude than the amount needed to reproduce a color photograph. Therefore, digitization projects for printed scores can be approached with some degree of confidence (though the case will be different for manuscripts). The only other noticeable difference between scores and books in relation to digitization is that scores tend to be larger in page size than books, which may make a difference in the actual machinery on which the scanning will be done. The option of scanning from microfilm was noted above as well. Otherwise, the physical preparations for digitization of scores will be the same as that for other materials. This will not be covered here because there are many introductory sources now easily available.¹⁵ The special problems of cataloging music will certainly be encountered in the process of preparing the metadata for the retrieval of digitally copied scores, but these also fall beyond the scope of this book.

Notes

1. Signature-bound scores that fail the second double-fold test may be sent out, though with the risk of either being mutilated by machinery or requiring expensive hand treatment, or may be rebound in-house (see chapter 5), or may be treated as brittle volumes in need of preservation (see chapter 7).
2. Greg Campbell, "Binders' Price Competition Seen as Threat to Book Life," reprinted in *Abbey Newsletter* 16, Number 7-8 (December, 1992), 106.
3. Matt T. Roberts and Don Etherington, *Bookbinding and the Conservation of Books*, (Washington, D.C.: Library of Congress, 1982), 240-41.
4. However, "single-notch adhesive bind" refers to a publishers' binding in which signatures are cut up the middle and adhesive bound, without fanning, rather than being sewn through the fold.
5. Sibley library recently had over half a shipment, including some very expensive monumental volumes, returned double-fan bound with the "sew through fold" instructions actually crossed out by a new supervisor. The binder paid to replace 27 of the volumes, the rest were shelved as bound, in expectation of lighter use.
6. None of the other folios are likely to need guarding, and it is better to leave them as they are; guarding all the folios of all the signatures will distort the original shape of each signature and result in a significantly thicker spine, leaving the book weaker and wedge shaped.
7. A group of German scientists are currently researching techniques whereby the same bath that carries acid-neutralizing agents and buffers will also introduce strengthening polymers into paper. Although it may take many years, if these techniques are developed and made commercially available, it may be possible to actually rehabilitate brittle papers and books. In the meantime, once an item becomes brittle it is not worth treating unless its artifactual value is very great, in which case several treatment methods should be considered, in consultation with a museum conservator.
8. The Bookkeeper process is described and analyzed extensively by Sarah D. Stauderman, Irene Brückle, and Judith J. Bischoff, in "Observations on the Use of Bookkeeper® Deacidification Spray for the Treatment of Individual Objects," *The Book and Paper Group Annual* 15, (1996). The article is published in its entirety on the web at <http://aic.stanford.edu/conspec/bpg/annual/v15/bp15-17.html> (31 October 2001).

9. Of 2,885 books and scores processed in the bindery at Sibley Music Library between January and October 2001, 663 (23%) were acidic.

10. Michael M. Domach, Ph.D., "Technical Evaluation of PTI Mass Deacidification Technology," in *An Evaluation of the Bookkeeper Mass Deacidification Process*, Technical Evaluation Team Report For the Preservation Directorate, Library of Congress, Pittsburgh, PA: September 22, 1994. See also Sarah D. Stauderman, Irene Brückle, and Judith J. Bischoff, *op. cit.*

11. Out of 906 scores sent by Sibley Library for treatment in December of 2001, twenty-three registered as being still acidic when processed in March of 2002. These were returned to Preservation Technologies, in which humid-condition tests showed that the amount of MgO was sufficient to produce a pH in the desired range of 9-10 when the hydrolyzation process went to completion. Of fifteen items located for retesting in July of 2002, eight (mostly Durand publications) registered as still acidic. Given the demonstrated strengths of the Bookkeeper process, further testing to determine what materials are at greatest risk for slow hydrolyzation and what type of humidification follow-up may help to speed the process would be valuable.

12. Bookkeeper final report, p. 2.

13. Nancy Elkington, ed., *RLG Preservation Microfilming Handbook*, (Mountain View, CA: Research Libraries Group, Inc., 1992). A second set of guidelines for filming archival and manuscript documents is also available but is less appropriate to the filming of printed music.

14. The smallest meaningful unit of information in music is a dot, which must be captured but can be reprinted fairly large without change of meaning. The next unit is probably the difference between a sharp and a natural sign; this difference, also, can usually be preserved by exaggerating contrast, which fits into certain schemes of encoding data for storage. These are both larger than the difference between the printed letters "c" and "e," which is the standard smallest meaningful unit for print.

15. An excellent up to date resource is "Moving Theory into Practice: Digital Imaging Tutorial" promulgated on the web by Cornell University at <http://www.library.cornell.edu/preservation/tutorial/> (6 November 2001).

Brittle Score Preservation

As with so many other issues relating to music, the problem of preserving or replacing brittle scores is generally more involved than that of replacing books. A higher proportion of scores than books become unusable due to brittleness, both because of the type of use and handling involved and because of the quality of paper typically used in score production. Even a relatively small collection, therefore, is likely to contain many scores that are too brittle for use and many more that will become brittle during the next fifty years. In addition, the process of choosing replacements for brittle scores is complicated by the wide variety of music editions in print; even well-educated musicians and librarians can become bewildered by this task. Fortunately, many irreplaceable scores are relatively short pieces of sheet music that can easily be photocopied in-house, if there is a machine that can handle 11" x 17" paper. Unfortunately, scores that are too large (thick) to process easily in-house will also be relatively expensive to have photocopied commercially, especially if they involve parts.

Given the magnitude of the problem, different libraries will have occasion to develop different selection procedures for treatment, depending on the resources available. The set of treatment alternatives available for brittle scores, however, is even more limited than that for conservation of scores on paper that remains sound. Even with limited staff time available, it is possible for any library to formulate a policy that will make many decisions sufficiently automatic to carry out an efficient brittle score replacement program. Indeed, one key to success may be to limit the number of staff members involved. A decision that can be made in five minutes by one well-trained librarian will, in most cases, be replicated by a team of three or more librarians discussing the case over the course of a week. An outline of the work flow for brittle score decision making was presented at the beginning of chapter 5. The general process is described more fully here, and a sample of a full preservation policy for an academic music library is included as appendix C.

Preservation Policy Formation

Does the library have sufficient good copies or comparable editions remaining on the shelf? If so, a damaged or brittle item can be placed in storage or discarded. "Sufficient," "good copies," and "comparable editions" are all questions of judgment that must be answered separately by each library, but a successful replacement program will require that they be determined, at least partly, at the level of policy, and not on a continuing case-by-case basis. On the other hand, even with a sound preservation policy in place, the determination will require the judgment of an experienced librarian with a solid understanding not only of that policy but also of the library collections and the current state of music publishing. A good balance can be reached by developing a general policy with input from all library staff, to be implemented by a single librarian (probably the conservator if there is one) who can consult with others where conflicting issues arise. Preservation policy must address the following questions:

Policy Basis in Library Mission

Based on the mission of the library, what types of materials must, should, or should not be replaced if irreparable? Every library has material collected over the years that is more or less distant from the library's mission, is a poor performance edition, or receives no apparent use. Making decisions about individual items

without a policy in place can result either in enormous time commitment or in loss of irreplaceable scores, so it is quite important to have wide staff involvement in designating treatment policies for at least some large categories. For example, “for use by our conservatory library patrons, standard repertory should comprise two to five (total) copies available in multiple standard performance editions, as well as one or two copies in critical or monumental editions, with older editions kept available in storage for research use. Damaged standard editions more than twenty years old should be replaced with new scores and discarded”; or “Our small public library boasts a strong collection of popular vocal songbooks that we will repair or replace as necessary, but we cannot support replacement of instrumental scores. In-house repair of instrumental scores is supported, and gift scores in good condition will be bound and added to the collection.”

Budget Issues

How will the budget for replacement of irreparable items be formulated? Does the library have the resources to upgrade its collections by replacing cheaper editions with better ones? Always? Only when there is no good edition in the collection? Will there be a cutoff expense for individual items, or simply an overall budget line? Commercial photocopying can be much more expensive than purchasing new items. On the other hand, funding sources are sometimes available for preservation copying that would not be there for new acquisitions. What efforts can be made by library staff to locate preservation money? Are there institutional resources outside of the library for this research?

Guidelines for Replacement in Print

What constitutes an adequate replacement for an edition that is out of print? Are there certain publishers or editors that are considered too important to relinquish, so that the additional expense of making a preservation copy rather than purchasing a cheaper new edition is justified? Shall any guidelines be set for the librarian making that decision?

Duplication Options

If no adequate replacement for a score that the library wishes to retain can be found in print, what is the favored method of copying?¹ Photocopies produced in-house are the cheapest method of getting the music back onto the shelves. Microfilm can be expected to last longer as a “master” copy, however, and digital copies may be easier to use for high-circulation or ILL purposes as long as there are no copyright issues, which is often the case with brittle scores. Although microfilm is waning as a medium for access, and the time when digitization will become both archival and affordable is approaching, guidelines to define the balance between types of access are still necessary. Some scores will be most useful as paper copies on the shelf for a patron to check out in a hurry; others may be digitized for lending purposes or even sold in digital form to support the preservation program.² In other cases, an archival film may suffice to keep an obscure resource permanently available to those few researchers who really need it.

Copyright Issues

How will copyright issues be handled? A provision of the 1976 copyright act specifically permits libraries to make up to three (for microfilm purposes) analog copies of brittle or damaged materials for preservation purposes, if a search is made in good faith for a replacement in print and the original is withdrawn from circulation. This provision is separate from “Fair Use” and is referred to in this manual as “library use.” Note that materials published before 1923 are out of copyright altogether, while for materials in copyright “library use” cannot be extended to digital copies unless the library can demonstrate that the digital copy is prevented from circulating beyond a single library building (i.e., it is restricted to in-house use and not networked in any way), and even then only one digital copy is permitted. What will constitute a “good faith” search for a score? What records will be kept of attempts to request copies of out-of-print scores from publishers?

Disposition of Brittle Materials

In general, what brittle items should be discarded, and what stored? Presumably, material that is well duplicated or very distant from the library's mission should be discarded, but it will be worthwhile for some libraries to store some materials whose current level of use does not warrant the investment needed to keep a copy on the circulating shelves. Criteria should be set for removal of nonreplaced items to a rare book area with suitable housing, or to other types of storage if available, perhaps with less expensive housing. Policy decisions must also be made regarding whether to store or discard brittle materials that have been replaced with alternate editions and those that have been duplicated in some way. Some libraries may decide to keep brittle originals, suitably housed and removed from circulation, as a form of preservation master, while other libraries may not have the space to devote to that use.

Selection for Treatment

Treatment selection is taken here to mean the process by which a particular score comes under consideration for repair, replacement, etc. There are two standard selection methods, which can be used simultaneously if staff and financial resources permit. The first, by virtue of being simplest to implement and most likely to make an immediate difference to current library patrons, is described as "use-based" selection, whereby materials are sent for repair by circulation personnel after they have been turned in by patrons. To implement this method, circulation staff must be trained to recognize and search both for obvious damage and loss, and signs of brittleness. Because most circulation staff are probably in the practice of pulling items with ripped pages, lost parts, and serious markings, the only additional training they may need is to spot signs of brittleness (discoloration, certain types of damage) and to perform the double-fold test. (Crease a small, inconspicuous corner of a page, preferably an upper corner, for scores, first one way and then the other. If it falls off, the page is demonstrably brittle.) Other criteria may be added, depending on resources, such as scores with old, acidic pamphlet bindings, since those can hasten the embrittlement of the music.

The other method of selection is proactive, concentrating on brittle scores from a particular collection, subject area, or other intentionally defined group. This more coherent selection model is often preferred for use with grant proposals, since the grantor can know exactly and specifically what they are paying for and why. In this case, the criteria for the group of materials is set, then the specific items that fit those criteria are checked systematically for brittleness or other treatment needs. When establishing the criteria, it may be possible to simplify certain steps in the treatment process, such as choosing to include scores from one or more particular publishers that remain in business, or only scores that are out of copyright.

Any score that fails the double-fold test can be considered too brittle to repair for normal musical use. However, there are a few additional circumstances that normally render a score irreparable, or at least not worth the expense. If an older score is oversewn or adhesive bound, it cannot be rebound successfully, since the only type of rebinding available will be adhesive, and older paper tends to be too weak for this type of binding, as noted previously. As the proportion of acid-free paper grows in collections, this may become less the case, but even then low-quality paper will, more gradually, degrade and weaken. Certainly this prescription will remain in force for the opening decades of the new millennium. The other decision that can be made quickly by an experienced librarian is whether a score from standard repertory can be replaced more cheaply than it can be repaired. It is partly for this reason that it is advisable for a single staff person to make a repair/replacement determination in a single process for items selected through use.

The next step is to search within the library for comparable scores. It will, in many cases, be fairly automatic, especially with a replacement policy in hand and a well-cataloged collection. But it will not be as simple as gift or catalog copy searching, where only identical hits are to be considered. For the most important standard repertory, there may be a wide variety of editions and formats, enough to cause confusion during the search as well as raise questions regarding replacement options and even the need for replacement of a particular edition. Other types of material are problematic by nature. Publisher compilations and binder's

collections that consist of scores otherwise unrelated will often require item-by-item comparisons of their contents with other collections as well as searches among individually published materials. In older library collections, many scores that show up as duplicate or alternate editions in the catalog may be no less brittle than the one being searched. An intelligent and knowledgeable graduate student may be able to carry out much of the in-library searching process, but an intimate knowledge of the library collection will be important for more involved searches.

Replacements

One may imagine that the ideal replacement for a brittle score would always be an identical edition still in print or a reprint. This is not always possible, however, or even necessarily desirable.³ The library search process can be used partly to determine whether a weakness exists in current library holdings that can be addressed by replacing an inferior brittle edition with a better new edition. For scores published after 1922, the search for in-print replacements has added importance because a library must be able to demonstrate having made an effort "in good faith" to purchase a replacement before resorting to preservation copying. The actual process of searching for scores in print ranges from simple on-line searches of music publishers and vendors to downright detective work to locate the exact edition that you would like to replace. Many publishers now have on-line catalogs; for foreign publications, in particular, these are well worth checking if you have drawn a blank searching an U.S. distributor. Useful web sites are included in the list of resources in appendix B.

Final Disposition

With all the information in hand, a decision regarding the disposition of the brittle score in accordance with library policy is usually straightforward, if not easy due to financial constraints. To summarize once again, the basic choices are repair, replace, or copy the original item or leave it untreated, then reshelfe or store it, with or without new housing, or discard it.

Record Keeping

Some sort of record keeping system is necessary both to track materials in progress and for use in statistical reporting and planning. If a library's automated system offers adequate reporting and item-level annotation it may be possible to do all necessary record keeping in item records. Annotations in the on-line public catalog that indicate the current location of items undergoing repair or replacement are a valuable service to patrons and a convenience to staff. However, it is often useful to supplement library system annotations with a local database in which more extensive notes can be kept and manipulated, including the preparation of custom forms and reports for items sent out for reformat, deacidification, etc. The precise form of such a database will depend on software preferred by the library and staff. Samples of the records and forms used by the author are included in appendix C.

In-House Photocopying

Any score of forty-eight pages or fewer (including nonnumbered pages) can be photocopied and pamphlet-bound in-house, regardless of the original binding style. The most important factors affecting the feasibility of doing quality in-house copying of scores will be determined by the features available on the machine used for the copying. If your copy machine does automatic two-sided copying, do not use the feature! Your brittle

original is likely to be destroyed during its progress through the bowels of the machine. If your machine is set to center pages automatically, this feature must be disabled for preservation photocopying, since it will make it impossible to print the two sides of each sheet in *register* (i.e., with margins neatly matching on the opposite sides of the page). The standard photocopy contrast setting will produce poor copies from older, discolored pages, but many machines include two other settings under a variety of names. One is used for copying photographs and distinguishes a wider variety of shades of gray than the standard setting. The other works best for preservation photocopying because it does the opposite; it exaggerates contrast, copying only very dark material and failing to pick up lighter marks and discolorations. This setting makes a huge difference in the success of in-house photocopying, so it is unfortunate that its presence or absence on the machine you must use will probably be out of your control. If you have the opportunity to specify requirements for a new copier purchase, or to decide which of several available machines to use, the two crucial elements to look for are the high contrast setting and the ability to accommodate 11" x 17" paper. It is possible to compensate for the latter failing after a fashion by using image reduction, but this may interfere with copying opposite sides in register and necessitate a change in format (size) which may have implications for cataloging as well as ease of use.

Materials required:

- one or more items to be copied
 - eraser, transparent repair tape,⁴ knives for disbinding
 - cream-colored, acid-free paper, 11" x 17" sheets⁵
 - paper cutter, bone folder, glue (if the score is over sixteen pages)
 - pamphlet binding materials
1. Disbind the score and detach the separate pages. Rare scores may need to be copied without the cleaning procedures in step 2 or disbinding; see below about copying from bound materials.
 2. Erase any pencil marks and repair any tears that affect the text. Cover pen markings with Wite-out paint or tape and place Post-it notes over any library markings that are to be retained.
 3. Set the photocopy machine to use the bypass paper tray and the high-contrast focus.
 4. Set the detached first page on the glass platen of the copier front side down, with the top edge against the leading edge of the platen (usually the left edge) and the outer edge at the 11" line on the ruler at the side of the platen. Make one copy, checking that the print is not too light or dark on the copy. Adjust it if necessary and redo the copy.

If the front page is blank (this sometimes happens with parts that start on page two to avoid a page turn), do not copy it. Go to step 6.

If the paper is deeply discolored, it may still be possible to produce a good copy with a two-step process if your machine has the high-contrast mode. Make the first copy in high-contrast mode on a light setting so that the copy comes out gray on white. After the entire piece is copied, run the copy through again with the machine on the standard setting. This should produce a good black on white copy. For the production of the second generation copy you may use the two-sided copying feature, if the registration of the two sides is satisfactory (see step 7), since the originals are not brittle.

5. When the copy comes out, turn it over horizontally (side over side, not head over tail) and place it back in the bypass tray with the leading edge of the copy (the edge that comes out first) in toward the machine. On most machines the blank side will now be showing, but some may feed differently.

6. Turn the page on the glass over, also horizontally, with the second side down against the glass, top against the leading edge of the platen and outer edge against the 0 line on the ruler. Moving the sheet over this way will have the effect of positioning the copy in correct registration with the copy of the other side (i.e., matching margins).
7. Copy the second side and check that the copy is properly aligned and both sides copied well. Check the registration by looking through the copy at the light to see if the print matches up correctly. If the registration is not correct, it will be necessary to experiment with the machine in order to determine the steps needed to produce a correct result, and substitute these for steps 4-6 here.
8. Return the copy to the exit tray, second side showing, place the original face down on a flat surface, and go on to the next page. Copy all the pages in the same manner, so that there is a pile of copies in the exit tray (they should be in page number order) and a separate pile of originals.
9. Using either the guillotine or the shear paper cutter, cut off excess paper from the bottom margin; do not trim the spine edge. If you use the guillotine cutter, make sure that all the copies are turned with the excess paper on the same side before you cut!
10. Use the marginal crease method of page attachment for scores consisting of two to seven sheets, glue guarding for scores of eight to twenty-four sheets, and commercial double-fan binding for scores of more than twenty-four sheets.

Copying from Bound

Copying from bound materials may be necessary for replacing missing pages from borrowed scores, or for copying rare materials. No explicit directions can be given here because the procedure is very dependent on the particular design of the photocopier used for the purpose. It will probably not be very problematical if you have a “book-friendly” copier whose platen is placed so that bound materials can drape naturally over the edge. With regular office copiers, however, it may be difficult or impossible to copy directly from a bound item to produce two-sided sheets in register, depending on the tightness of the binding and the artifactual value of the original. The safest procedure is to produce single-sided copies and copy odd sides onto even; you will still face the familiar dilemma of whether to risk damaging the spine or be satisfied with shady areas along the inner edges of the music.

Notes

1. The term “reformatting” is often used to describe any means of duplicating brittle materials, but is most properly applied to copying that involves a change of format—most likely medium or size. “Copying” is a more general term. As digital reformatting becomes predominant the distinction may become moot, since even “photocopies” will increasingly pass through a digital stage, and more commonly be stored in that format.

2. At the time of this writing the latter is an unusual case, given the costs of digitization and the liberal outlook still common among libraries. However, as the digital age matures and libraries find their place in the new economy, selling copies of rare items will probably become more feasible.

3. One special case must be mentioned here, beyond those discussed in the text. While Editions Durand does sometimes come out with reprints of their older editions, they also keep old stock on hand indefinitely. It can come as quite a shock to buy an expensive “new” copy of a Durand edition only to discover that it is no less brittle than the one being replaced.

4. For this particular purpose, the transparency is more crucial than any other factor.

5. The cream color is recommended here both because people expect older editions to be pleasantly discolored, as they normally are by the products of acid damage and other chemical degradation, and because the higher contrast of bright white paper is more tiring and confusing to the eye.

Glossary

This section is intended very narrowly to gloss terms as they are used in this manual.¹ Entries marked with an asterisk* are listed in appendix B with specific information about how they are used and obtained, along with contact information for suppliers.

acid-free—a phrase that is used loosely to describe material (paper, board, etc.) that is not acidic. Its stricter interpretation is that the material not only has a pH of 7.0 or greater, but also has some sort of alkaline reserve to prevent the paper from becoming acidic through degradation or other internal chemical changes, or absorption of acid from the atmosphere.

alkaline reserve—presence in paper or other material of some chemical (usually measured by comparison to an equivalent amount of calcium carbonate, which is the most commonly used buffering compound for paper as it is a natural byproduct of papermaking) that is capable of taking up hydrogen ions and thus neutralizing acids as they form. Acids have a violent desire to give away hydrogen ions (atoms with a positive charge) even when they are not wanted, while bases (alkalis) want to snatch them up. An acid and a base mixed equally will yield a nonreactive salt and water.

ANSI—American National Standards Institute, founded in 1918 to coordinate the promulgation of voluntary standards among U.S. businesses. In the library world it is best known for its standards regarding paper permanence; <http://www.ansi.org/> (25 October 2002).

awls*—sharply pointed, wooden handled awls are used for poking holes. For music, their chief use is to make the holes through all pages of a pamphlet, the first step in sewing it into a cover. Awls come with variously sized and tapered shafts. Ideally, thinner-shafted awls are useful for making the end holes and for easing through thicker pamphlets; thicker awls are used for making the three middle holes, where the needle will need to be inserted past a previous stitch, in five-hole pamphlets.

backing—(see p. 99) carefully pounding the rounded spine of a book with a backing hammer while it is held tightly gripped in a job backer vise will form the mushroom-profiled “shoulder” from which a book will hang in its cover on the shelf. The shoulder helps to distribute the weight of the book over the entire spine, on the same principle as a Roman arch; it also helps to shift the strain of a wide opening outward from the point where each page is attached at the spine to the wider hinge area formed at the shoulder. This helps to stabilize adhesive binds, which is helpful for books that will get a lot of photocopy use, though acidic paper may eventually break in the hinge area as well. Note also that the photocopy user will not thank you, since by keeping the book from opening right to the center as readily and widely, it may cause more shadow on the copy. Library binders can “round and back” some materials but prefer not to add that step to their processing; it is only worth insisting on the process for adhesive bound scores over 1½” thick.

backing hammer*—the hammer used for backing books is slightly smaller than a carpenter’s hammer and has a wider, flattened face

basis weight—paper made for different purposes is made in different sizes. These are governed by a set of standards promulgated by the U.S. Government Printing Office, and made available on-line at www.access.gpo.gov/qualitycontrol/paperspecs/txtindex.html (27 June 2002). The many different types of paper and weight are bewildering nonetheless. A standard ream of archival-quality book paper (recommended for preservation copies) will be 500 sheets, each 25" x 38"— and will be pretty heavy. A standard ream of photocopy paper will also be 500 sheets, but only 17" x 22" in page size and a lot lighter, even if

the paper itself happens to be thicker and denser. Within a particular standard category, the thickness of each page is described by the weight of a full ream of sheets of that thickness. Thus, each 8½" x 11" sheet of thin book paper that weighs forty pounds per ream will be lighter and thinner than a sheet of thick "high quality" photocopy paper, though it only weighs twenty-eight pounds per ream. See ***paper*** for recommendations of paper types for music binding and conservation.

beeswax*—paraffin may used for waxing thread for sewing books, but beeswax is traditional

bench sew—a term that might be applied to any sort of hand bookbinding (done at a bench) but is usually taken by library binders to refer to sewing signatures through the fold. In any case, it does indicate a hand process for which extra time charges usually apply.

bifolio—the thinnest sewable signature for standard book binding, formed by two sheets of paper folded over. Books are occasionally formed from bifolios, and these are very difficult to rebind due to the great amount of sewing required for the number of pages. Bifolios are used more often in combination with larger signatures to adjust the total number of a book's pages, or for sheet music pamphlets.

binder's collection—a group of publications bound together by their owner rather than by their original producers. This was a common convenience offered by printers and stationery shops throughout the 19th and early 20th centuries and was much used by musicians for their sheet music. These collections are a mixed blessing for libraries; they give a wonderful sense of what individuals collected and a single volume can be a treasure trove, but they are a nightmare to catalog fully.

binding knife*—sturdy blunt knife used to cut binding threads without cutting paper; it can also be used for removing staples. The curved blade style tends to work best for most people.

binding thread—see ***thread***

blotter paper*—thick, spongy paper (the only paper thicker than board) specially made to absorb water, used in aqueous cleaning procedures and also useful for protecting work surfaces during solvent cleaning. It is not recommended for placing between pages of damp books for emergency drying because its thickness will further distort the binding. Use paper towels instead. It should be purchased and stored in large sizes, since each piece used in aqueous cleaning should be larger than the paper being dried.

board*—the board used in this manual is made like paper but is thicker, denser, and more rigid. The same set of standards, on-line at <http://www.access.gpo.gov/qualitycontrol/paperspecs/txtindex.html> (2 July 2002) governs both.

board shear*—like a paper cutter but larger and heavier, it is used to cut binding boards as well as cloth and large sheets of paper. It works on the same principle as a paper cutter, pinching off the sheet between its blades rather than cutting directly through them. Like a paper cutter, it will not cut cleanly through more than a few sheets of paper at a time, despite its size and weight. Board shears are better purchased used than new; not only are they less expensive, the older ones tend to be of a higher quality as well.

bone folder*—smooth 4"-7" sliver of bone (or plastic or horn or Teflon) used to fold and burnish paper. The plastic folders slide less easily over the paper and are not recommended.

book block—all the pages of a book laid together in order, but without the cover. The term refers to the block shape and can be used to refer to the unit either before the endleaves are added and the pages are attached, or at any stage of binding up until the cover is attached. It may even be used to refer to the contents inside the cover, for instance if the block is set into the cover incorrectly.

book press*—(1) a heavy iron instrument consisting of a flat bottom platen forged with an arch from end to end that supports a second iron platen suspended on a screw through a hole at the top of the arch. The upper platen is screwed down against the lower one to press the contents between them. (2) Modern book presses tend to be made with wood, so that they are lighter and easier to transport (usually disassembled). They also tend to be somewhat larger, which is useful for music binding. The only procedure in this manual that calls for a book press is spine replacement, but they are indispensable in case binding.

brass-edged book boards*—the brass edges, which are usually screwed into a solid wood board, protrude about ⅛" along one long edge of the board and are used with a book press to define the shoulder and hinge area of a case bound book.

brushes*—for applying glue to cloth and board, and for wetting water-activated glues, use round brushes $\frac{1}{2}$ "- $\frac{1}{2}$ " in diameter since these concentrate the application; for aqueous cleaning and tipping in, use flat brushes $\frac{1}{2}$ "-3" wide.

buckram*—a heavy cloth filled with some sort of sizing (they vary), used for bookbinding. Buckram comes in various weights; F-grade is strongly recommended for all procedures in this manual, though C-grade is used in commercial pamphlet binders. The buckram most easily available now is treated with an acrylic size that produces a watertight finish. It is the cloth used by library binders. It can sometimes be difficult to glue in-house, however, depending on how much of the size works through to the "wrong" side of the cloth.

bulldog clamp*—This term is used for a variety of clamps in fields ranging from surgery to heavy construction. Clamps appropriate for paper and board should clamp tightly but not tear up the material being clamped. The office clamps that have black U-shaped springs with wire "handles" that fold down are fine, as are those that look like large metal clothes pins with plastic insulation on the clamping edges.

caliper*—a device for measuring thickness (to which the word "caliper" actually refers), it usually consists of a ruler with two projections, one fixed at 0, the other sliding along the ruler. You can also use a ruler to measure the thickness of a spine by laying the item to be measured on a table, standing the ruler vertically beside it and moving the ruler along all the edges, and taking down the highest measurement. A caliper will be less prone to error, however, as long as you read it carefully. Move the sliding stop outward along the ruler to leave a space wide enough to insert the book to be measured, then adjust the sliding stop back inward. The best measurement is reached when the caliper can move freely around the entire circumference of the book with the sliding stop not quite touching, but with no more than $\frac{1}{16}$ " free space, at the widest point of the book. Reading some calipers can take practice, since the rulers are often very narrowly graduated, which can lead to the error of doubling units (e.g. reading $\frac{1}{8}$ " as $\frac{1}{4}$ ").

case binding—hard-cover binding.

center-sewn tape*—two pieces of adhesive tape (usually a water-activated adhesive) sewn together glue-side-out along the center of the tape. It attaches two folios (such as a pamphlet cover and a binder) at their hinges. It is never recommended for attaching paper folios of sheet music, however, because it is too heavy for the purpose and will cause the paper to hinge and break along the edge of the tape.

Conservation OnLine—“CoOL, a project of the Preservation Department of Stanford University Libraries, is a full text library of conservation information, covering a wide spectrum of topics of interest to those involved with the conservation of library, archives and museum materials.” This is quoted from the web site, at <http://palimpsest.stanford.edu/don/don.html> (3 July 2002). Some sections are updated more frequently than others, but it is an invaluable resource for conservation information.

commercial binding—for the purposes of this manual, “commercial binding” refers to publisher’s bindings and “library binding” refers to rebinding done for library use. Commercial binding is geared to binding many identical copies of a book as economically as possible, with generally poor quality results.

corner rounder*—a device for cutting the corners off of binding boards, it consists of a T-square form with a rounded blade (usually $\frac{1}{4}$ " or $\frac{1}{2}$ " interchangeable) operated by a lever.

cover board, Davey board*—a type of paper particle board used for book covers. It comes in various thicknesses described with the point system also used for paper. 0.067 board is the lightest recommended for binding, to be used for smaller books. For slip cases and cover boards for music, 0.088-0.098 is a better range—thick and rigid but still possible to cut using a manual board cutter. If your library does in-house case binding, see if you can order cut board from them (or finished cases, but they may be as expensive as from a commercial bindery, so check that as well).

cutter/paper cutter*—A good standard paper cutter from any library or office supplier is invaluable for music binding; a cheap one is of course an ongoing irritation. If you are able to order a new one, make sure that it includes a clamp (clamps the material to be cut along the edge of the blade). Note that the classic paper cutter does its work the way scissors do—by pinching the paper between two blades—and not by cutting like a knife. This means that a newly sharpened paper cutter blade will not be “razor sharp.” A dull blade

will, however, tear at paper and cut unevenly. Trying to cut more than a very few sheets at a time will also result in uneven and ragged cutting. To cut a lot of sheets, use a guillotine cutter.

deacidification*—any process by which acids are neutralized can be considered to be deacidification. Conservators prefer processes that also leave an “alkaline reserve” to neutralize the acids that will continue to be produced by chemical processes taking place in the paper over time.

double-fold test—a simple test of paper strength and acid damage. If you crease a small corner of a page first one way and then the other way and it falls off, the paper is considered brittle. Occasionally paper strength is measured, by informal extension, by the number of folds it will survive. In this manual, if a corner pulls off easily after four folds the score is considered a poor candidate for machine rebinding.

doublure—many books have outer endleaf signatures, one sheet of which is glued to the outer cover and called a “paste down.” In some cases, however, only a cloth hinge is pasted down to the outer cover, leaving all of the endleaves free. A doublure is a separate sheet of paper cut to size and pasted to the inner cover in those cases.

erasers*—electric erasers are strongly recommended for music conservation. Music tends to be heavily marked, which will make manual erasing a tedious task and even more ergonomically unsafe than machine erasing. Also, manual erasing tends to involve more lateral stress on the paper, which can lead to damage of older papers even if they are not brittle. See page 69.

flush—in a classic binding, the cover extends about $\frac{1}{8}$ " beyond the book block on all exposed edges, so the book block will not contact dusty, dirty shelves. For certain modern binds (very thick books, mostly) flush binding (the cover flush with the book block) is recommended since the book block rests on the shelf rather than hanging in the cover, thus putting less stress on the hinge and spine. This is not recommended for music because the pages of scores used on music stands would wear along the bottom edges.

folio—(1) a sheet of paper folded in half; the basis of all signature binding. (2) The largest format of book, made by folding full sheets of paper in half and sewing through that fold. Smaller book formats (quarto, octavo) are named as further doublings of a full sheet, which is only cut after it is bound with others into a book block. Part of the science of printing is managing the impression of full sheets of paper with the content of up to thirty-two pages of the finished book in their separate blocks, all with the correct sides opposite each other so as to line up when the sheet is folded, and in register. Nowadays the format names designate similar sizes achieved by any means. Scores are often described as “folios” regardless of how they were printed when they surpass the size that will fit on a standard music library shelf, usually 14" high. Music folios thus require special shelving, and may either be stored flat in map shelving or upright in custom shelving with closely spaced dividers (no more than 4" apart) to keep them from slumping into a curl on the shelf. Upright shelving tends to be most economical of space, since the scores must necessarily be packed in to hold each other up, but is a more specialized type of shelving (thus liable to be more expensive) and leaves scores without rigid covers very vulnerable to the deformation just mentioned.

gauze—see *super*

glue*—the two standard glues used for in-house library binding are wheat starch paste, which is reversible in water but must normally be prepared shortly before use or frozen, since it will mold, and PVA glue, short for polyvinyl acetate, which is normally purchased ready mixed. It will not mold and can be thinned with water, but requires solvents for removal once it dries. Another type of glue, methyl cellulose, is very weak and is used in this manual as a wet emulsion for spine cleaning. Library binders use glues of various properties for different aspects of binding. The glue used for double-fan binding is specifically chosen to remain elastic for a long period.

grain—nearly all paper and board is produced by running a slurry of water and fiber over a screen and then pressing out the excess water. This means that the fibers tend to be oriented in the direction of the flow of the water. Thus nearly all board and paper will bend a little more easily and gracefully in one direction (“with the grain,” in the direction in which the water was flowing when it was produced) than in the other (“against the grain”). The grain of buckram cloth is produced by the difference in tension between the less stressed warp threads and the cross-woven weft threads. It is less pronounced (and is usually hidden by

the curve of cloth stored on a roll), but cloth will shrink much more along the grain than cross grain, and will also distort greatly if stressed diagonally to its weave ("on a bias"). *All book binding and repair fabrics—cloth, board, and paper—should always be cut with the grain running in the same direction as the spine.* Grain direction can be determined in paper by gently rolling one corner upward; it will prefer to curve along the grain rather than across it. In board, grain direction can be determined by gently bending the board one way and then the other, being careful to allow for differences in width by bending only one section of the longer side. The direction in which it bends more easily is with the grain. This method can also be used for paper. Cloth is usually rolled up along the warp, so one can usually assume that the grain runs (confusingly) opposite to the curve of a piece cut from a roll.

gray-white board*—a laminate paper board the white side of which is buffered. That side is intended to be placed against the material being bound, while the gray side is intended as a sturdy barrier layer. Gray-white board is usually more rigid than pressboard and is the recommended board for commercial pamphlet binders. For in-house binder construction, gray-white board is also recommended, but it has not yet been standardized as of this writing, so it will be important to obtain a sample before purchasing a large quantity. Pay more for higher rigidity for making binders, but you need not do so for wrapping items for storage.

guarding—reinforcement of a folio along the fold with cloth or paper, usually to strengthen the fold for sewing. In this manual the term is also used loosely for any form of page attachment where two pages are joined to form a folio for sewing. See page 10.

guillotine cutter*—the heavy, razor-sharp blade of this cutting knife is designed to cut a large quantity of paper cleanly and is therefore useful in trimming book blocks, including preservation photocopies.

head—the top edge of a book or book block.

headband*—centuries ago headbands were attached to the cases of heavy books to aid in pulling them off the shelves. Nowadays they are decorative strips glued to the book block under the case.

heat tool*—an electrically heated spatula used to remove tape by melting and loosening the glue. It can also be used to activate heat-set glue in tight spine areas.

imitation leather*—using real leather in library binding repair is neither cost effective nor, in most cases, archivally sound, since most modern leathers are cut and dressed in very destructive ways, so that they do not last very long. Buckram repair cloth may be heavily sized and stamped on one side to give the look of leather, and this type of cloth is referred to as imitation leather. Most imitation leathers are made from C-grade buckram, rather than the thicker F-grade, and some of the sizing compounds are prone to crack and flake, so it is best to test a sample of a batch before ordering in quantity. Regular acrylic-sized, F-grade buckram will be noticeably more durable.

Japanese paper*—many repair papers are made in Japan, though the term is loosely used for long-fibered repair paper in general. These papers are characterized by very long fibers and come in a wide variety of weights ranging from kizukishi, which may be nearly transparent and is very delicate when wet, to mulberry, which is thick and opaque. See page 76.

job backer*—like a woodworking vise with a very large platen and with the screw operating from behind, rather than beneath, so that it can accommodate long, wide items, the job backer is used to hold books while they are being rounded and backed.

kettle stitch—a type of knot used in sewing signatures into a book by hand. Directions for this knot are given in chapter 5.

knives*—see *binding knife, x-acto knife*

library binding—in this manual, "library binding" is the new case binding supplied for library use by binders dedicated to that purpose. The machinery and processes involved are different from those of commercial binding, in that the library binder applies a particular group of techniques and materials to a whole variety of different volumes one at a time, instead of binding many identical volumes. Some publishers offer "library bindings," but these may not in fact conform to the standards set by the Library Binding Institute.

Library Binding Institute—Founded in 1935, the Library Binding Institute (LBI) is a trade association of certified library binders, suppliers and others. They publish a range of valuable information related to library binding, including studies about specific materials and procedures and also a binding standard, in collaboration with *NISO*. Member binders must adhere to the provisions of the standard.

methyl cellulose*—a weak glue that is used in this manual for controlling water for use in spine cleaning. Methyl cellulose is cheapest in powdered form, but can be stored indefinitely after it is made up in solution, unlike wheat paste. Also, again unlike wheat paste, methyl cellulose particles swell in cold water; it is prepared using a procedure thermometrically opposite to that of making gravy: the powder is dispersed in hot water, (hot tap water is acceptable for spine cleaning use for circulating materials) then thickened with the addition of cold water (ice water or refrigerated water is recommended in summer).

miniature score—(1) any printed score that has been reduced in size from its original published format; this is the definition all catalogers will know. (2) Any score smaller than about nineteen centimeters (the exact size may vary from one library to another). This is the definition shelves and users will know in libraries where the miniature scores are shelved separately. Some small format scores are miniature in height as originally published, while others that are miniature editions may still be well over nineteen centimeters if the original format was very large or the score is an Albert Weir study edition with four systems on each page. Separate shelving of smaller size scores, regardless of their cataloging status, is recommended as a conservation measure, since it lessens the likelihood that scores will be lost, obscured or deformed while standing on the shelf. It also saves space, since the shelves can be placed closer together.

mull—see *super*

needles*—needles for sewing books are larger than those for sewing cloth, to accommodate the heavier thread, but tend to be about the same shape as sewing needles, as opposed to embroidery and tapestry needles which grasp multistrand thread with longer holes.

NISO—National Information Standards Organization, a nonprofit association accredited by the American National Standards Institute (*ANSI*), publishes technical standards having to do with any aspect of information management, including standards relating to paper permanence and bookbinding.

octavo—named as a signature made by folding a large sheet into eighths and then trimming the edges, this term now denotes a particular format (size) used for choral music; it is smaller than most other types of sheet music and is traditionally used unbound due to the many copies usually needed for performance. Octavo collections are often housed in boxes, but single copies may be bound and shelved like other sheet music.

oversew—bind a book made from single sheets of paper by gathering the sheets into thin sheaves and sewing them one at a time onto the book block, stabbing through the sheaf all along the spine. The resulting spine is very strong but resists opening.

pamphlet—for the purposes of this manual, a folio or signature of any size bound by sewing or stapling through the fold.

pamphlet binder*—a rigid board cover into which a pamphlet is secured for added protection and to help it stand on a shelf.

paper*—thin flexible nonwoven material formed by letting water distribute a slurry of fiber evenly over a screen, and then drain through. Any sort of fiber may be used; for library purposes one hopes to find clean vegetable fibers. The set of national standards governing paper (and paper board) quality is found at <http://www.access.gpo.gov/qualitycontrol/paperspecs/txtindex.html> (2 July 2002).

parts—in library music binding, the word may refer specifically to parts that are sewn into light covers (if at all) and attached, in a pocket, to the “score” (sometimes actually one of the published parts) that is sewn or stapled into a pamphlet binder. Thus a quartet score and its parts and a quintet performance edition without a score will both end up with “four parts” in the pocket. This usage helps clarify matters to circulation staff when they are checking for a specified number of parts in a pocket. If there is no score, the principal part or highest part is traditionally attached to the binder. Where there is a principal part, this

practice probably does cut down on loss. Library binders may refer to case binding of music as “binding as score” and lighter paper coverings as “binding as part.”

petrie dish—a small flat dish normally used to culture mold colonies for biological experiments. Its size and shape are also convenient for holding small amounts of methyl cellulose glue.

pH—a measure of acidity in liquid expressed as a negative logarithmic function of hydrogen ion (**H⁺**) concentration; the “negative logarithm” means that the higher the number, the lower the concentration of hydrogen ions, and thus the less acidity. A neutral solution has a pH of 7.0 (10^{-7} grams of hydrogen ions per liter). A pH of 2.0 would indicate a concentration of .01 g/L. Don’t put your finger in.

pH pen*—a marker whose “ink” is a chemical sensitive to acidity; in the presence of a pH lower than 7.0, the chemical combines with hydrogen ions and turns yellow, while at lower concentrations it has a purple color. Like all tests of acidity, it requires a certain amount of water to work correctly, and pens that are too old and dry may give false readings.

phase box—any type of simple box constructed to house a fragile volume to protect it from damage and support it on the shelf. A correctly produced phase box should fit the volume closely to provide maximum support, no matter how it is constructed.

point—in paper and board thickness, 1/1000 of an inch; “100 point” (0.100) board is $\frac{1}{10}$ ” thick, “sixty point” (0.060) board is a little over $\frac{1}{16}$ ” thick. Paper density tends to be expressed in pounds, which is much more confusing (see below) but paper and board thickness expressed as points is consistent from one type of material to another. Note however that boards of the same thickness (e.g., 0.060 gray-white board) may vary in density and rigidity, which will play an important role in how they wear and what protection they offer. In print size, one point is a little larger, about $\frac{1}{12}$ ”.

pound—Paper is produced in a variety of *basis weights* for different purposes. This means that a ream of one type of paper will have a different number of sheets of a different size than a ream of another type of paper, which further means that a “50 lb.” paper of one type may be distinctly lighter or heavier than a “50 lb.” paper of another type. If you want to be sure that the “70 lb.” paper you order for making preservation photocopies of sheet music is indeed the unusually heavy stock that you want, you must confirm from the manufacturer or distributor that the paper conforms to the government standard for “uncoated permanent book, white and cream white.” This does have a different basis weight from “high quality xerographic copier, laser printer” paper. The only way to interpret the “poundage” statement in a catalog or on a package is to ask the distributor, or figure out which standard it conforms to and check the government web site (listed under **paper**).

pressboard*—the old standard for pamphlet binders, pressboard graduated from its first acidic tan-colored formulation to a green-colored nonacidic version before being superceded by the more rigid gray-white board. It is still available and is still recommended for in-house pamphlet making if you do not have a board cutter, since it can be cut in a paper cutter (which you will, however, have to have sharpened more frequently than otherwise!).

PVA*—polyvinyl acetate is the technical term for the “white” glue recommended for most common library binding and repair procedures.

register—in printing, this term refers to the correspondence of printed impressions, where the ideal is exact superimposition on the same side of a sheet in multiple-impression printing, or a similar effect on opposite sides of a sheet that will comprise two pages of text. If two pages are printed (or reproduced) perfectly in register on opposite sides of a sheet, the margins and lines of text will appear to be superimposed if the sheet is held up to the light.

ruler*—the procedures in this manual sometimes call for a ruler, for measuring, and sometimes simply for a straightedge, as in a firm, thin but not overly flexible strip of metal, on which a cork backing is a plus. As you will have noticed, English measurement (i.e., inches, rather than European centimeters) is used throughout this manual, that being the tradition of bookbinding. The one exception relates to metadata targets for preservation microfilming, where measurements are expressed metrically.

saddle stapler*—a device for stapling through the folds of pamphlets that consists of a stapler whose head is positioned over a ridge of metal shaped like a plain gable roof. The pamphlet is laid over the angle of the roof and can be shifted back and forth along the ridge so as to be stapled anywhere along its spine. Small saddle staplers are operated by hand like a regular stapler and are relatively inexpensive but are often designed for pamphlets with flexible covers, so they may only accommodate the smaller sizes of rigid cover. For library music binding, the stapler must have a “throat” at least 11” deep, to accommodate binders up to that width.

scrap paper*—a lowly but important class of paper used in binding, scrap paper should be relatively heavy in weight, both so that it will lie flat without wrinkling up when covering work surfaces and since it is used stencil style in glue application. Because it also needs to be as cheap as possible for budgetary reasons, and purchased in a relatively large sheet size, any other criteria of quality can be discarded for use with circulating library materials; kraft paper is recommended, but even the acidic brown paper like the sort used in grocery bags will be acceptable if the price is right. If you are doing procedures on rare or other archival materials, it is best to use clean blotter paper or other higher quality, clean, acid-free paper as scrap, and to change it often, since in this case it is protecting the material from the work surface and its contaminants.

screens*—the screening used in aqueous cleaning must, of course, be made of fiberglass, not metal. Screen used to support brittle paper during cleaning is unmounted, but the screen used for drying must be stretched in a frame.

shrink-wrap*—thin plastic sheeting, originally designed as a lightweight and economical airtight wrapping, it is now also used as part of a tamper-evident packaging for copyrighted software. Note that paper should not be packaged in airtight containers for long-term storage, so for library use, shrink-wrap should be pierced more than the minimum that is needed to let the air out as the plastic shrinks. See page 62.

signature—also called “gathering” or “section,” the group of folded sheets that is sewn through the fold as a pamphlet or part of a book (technically, only as part of a book, since the “signature” is the mark on the first page to say which section it is). In this manual, it refers to the unit folded and sewn or ready to sew.

silicon release material*—treated paper or plastic film used with heat-activated glues to protect the surfaces to which the glue is not supposed to adhere. The procedure in this manual uses a relatively high heat setting on the iron to shorten the application time. Therefore, a paper-based material is preferable to a plastic base, which is liable to cockle under the iron.

solvents*—the various types of solvent used for tape removal are covered in chapter 5.

straightedge*—rulers make good straightedges and can certainly be used for drawing and creasing in straight lines. Other objects with straight edges can also be used for the purpose, if they are available.

study score—the term preferred in publishers catalogs, referring to the use rather than the size (thus de-emphasizing the fact that they are cheaper to produce), but generally synonymous with the common library size designation *miniature score*. When searching for a replacement for a miniature score, you can usually use a study score.

super*—the functional term for a thin woven material also called gauze, mull, crash, and tarlatan. “Super” refers to the fact that it is stretched over the spine area, where it supports the page attachment. The other terms are mostly synonymous, but “tarlatan” may be used to describe a heavier cloth used in the same way.

tail—the bottom edge of a book or book block

tan board*—while “tan board” is a generic term, one particular brand (Archival Products’ “dark tan archival board,” 0.040 weight—see the supplies list) is recommended for use in making the type of phase box described in this manual. That particular material takes creasing very well and is also buffered.

target—a document usually consisting of one page, often with large lettering, used in preservation microfilm-ing to give added information either about the filming process or the volume being filmed.

thread*—for the in-house bindings described in this manual, using a double thread is important in itself, so choose the lighter of the two weights of thread normally offered by library suppliers—20/2 rather than 18/3.

Tyvek*—a proprietary material made from spun polyethylene fibers, it is very resistant to tearing. Tyvek is used by library binders to make light, durable pockets (the security of the attachment is the limit of their usefulness) and can be used in-house for similar purposes, if it can be obtained. Tyvek is also used to make adhesive tape, which is recommended as an alternative to cloth tape for reinforcing the spine folds of pamphlet cover sheets. It is lighter than the cloth tapes on the market, but more resistant to wear from the binding threads.

vinybind—one of a family of inexpensive bindings used by library binders for some text materials, it (and its relatives by various other names) involves adhesive binding incorporating the original cover with a clear material applied over it. It is not appropriate for music scores, which ordinarily can and should be sewn.

water*—see the comments in the section on aqueous cleaning, page 72.

wax—see *beeswax*.

weights*—weights of various sizes are very useful both for page repair and in making slipcases. Small, metal blocks such as old printers' blocks will work better than larger bricks or bags for many of the processes described in this manual.

wheat paste*—the advantage of wheat paste as a glue is that it is reversible in water. The disadvantage is that it will mold shortly after it is prepared, unless it is kept frozen or made with poisonous additives. “Quick and dirty” preparation directions are given in the section on Japanese paper repair, page 76, but following the package directions is recommended.

x-acto knives*—see *knives*

Note

1. An excellent dictionary of binding terms, Matt Roberts and Don Etheridge's *Bookbinding and the Conservation of Books, A Dictionary of Descriptive Terminology* has fortunately been reprinted on-line in an edition by Walter Henry at the Conservation On-Line (CoOL) web site at <http://palimpsest.stanford.edu/don/don.html> (2 July, 2002). When using that resource to look up a term, use the “browse” function, not the “full-text search,” since the latter returns everything *except* the matching main entry. This website is a wonderful resource, and the more use it receives the more it can help to standardize communications regarding library binding.

Materials and Suppliers

An in-house binding and conservation workstation for music will take about the same amount of space as a cataloging workstation, with a work surface *at least* 30" x 36". The workstation should allow work to be done either sitting or standing. Some height-adjustable drafting tables may be sturdy enough, but a better option, unless the workstation will mostly be used for other purposes, is to fix the table height at 36" and include an adjustable stool, taller than a regular typing chair, with a footrest. A work space larger than 30" x 36" will be needed to accommodate equipment beyond the basic small tools of pamphlet binding. Other requirements will be one or more shelves above the work surface for storage of tools and work in progress, and more shelving below for binders and other bulkier equipment. For very cramped library offices, it is feasible to use a multi-purpose table for binding part of the time, but this will require organizing other storage spaces for work and materials when not in use. If more than one person will be engaged in conservation activities at the same time, it will be necessary to have more than one work station available because the space cannot be shared simultaneously.

A paper cutter is necessary for most binding work except the bare minimum of pamphlet binding. Custom binding of any sort without a paper cutter will be very difficult. A sturdy cutter will tackle pressboard, though it will need to be maintained carefully and sharpened more often than if it is only used to cut paper. No paper cutter can handle denser boards without damage. While conservation activities and some types of binding require water, it is possible, if not convenient, to do all of the conservation activities in this manual without a specialized sink setup, as long as a staff room with a sink is available in the building. The best method for organizing a work space is to decide what activities will be carried out and by how many people and collect the minimum amount of materials required. The person who will be doing or supervising the work should determine how the storage and work space will be organized, and what sort of storage materials will be needed, unless there is an opportunity to custom design a full workroom, in which case other conservators should be consulted. Organizing the work space will naturally be an ongoing project as more materials come into use and more efficient storage options are discovered, but an important priority should be having the most often used materials close at hand. That sounds obvious, but it is easy to lose sight of the goal while solving the problems of where to fit everything, especially if the space is organized by someone other than the user. The list on the following page is intended to give a quick overview of the materials required for the various music binding and conservation treatments that are likely to be useful. Note that the list is cumulative; each successive group assumes the availability of the materials in the previous ones. Descriptions of the materials are found in the glossary, while notes about obtaining each item are in the "Sources for Supplies" list in this appendix.

Required for New Binding:

- large waste basket
- pamphlet binders (6" x 9", 9" x 12", 10" x 13", 11" x 14")
- binding knife (or blade type staple remover)
- saddle stapler OR
 - o awls (3)
 - o needles and thread
 - o scissors
- guarding materials (see chapter 2)
- large sheets of scrap paper

Optional for New Binding (If Using Inner Paper Covers):

- large sheets or roll of acid-free paper
- paper cutter and/or large cutting mat and x-acto knife (no. 11 blades)
- cloth reinforcing tape
- PVA adhesive
- large and small glue brushes
- water jar
- bone folder

Required for Custom Binding:

- pressboard or gray-white board
- corner rounder
- board cutter (or paper cutter for pressboard alone, or a lot of patience and no. 24 knife blades)
- 4" buckram or 3" Tyvek tape for hinges and media or minimal pockets
- roll buckram (preferably 45" wide) for full enclosure pockets
- 0.010 and 0.020 tan board
- tyvek for CD pockets

Required for Other Enclosures:

- 0.040 tan board for phase boxes
- x-acto knives (no. 11, no. 24, no. 25 blades)
- Davey board for slipcases
- shrink-wrap materials

Required for Conservation:

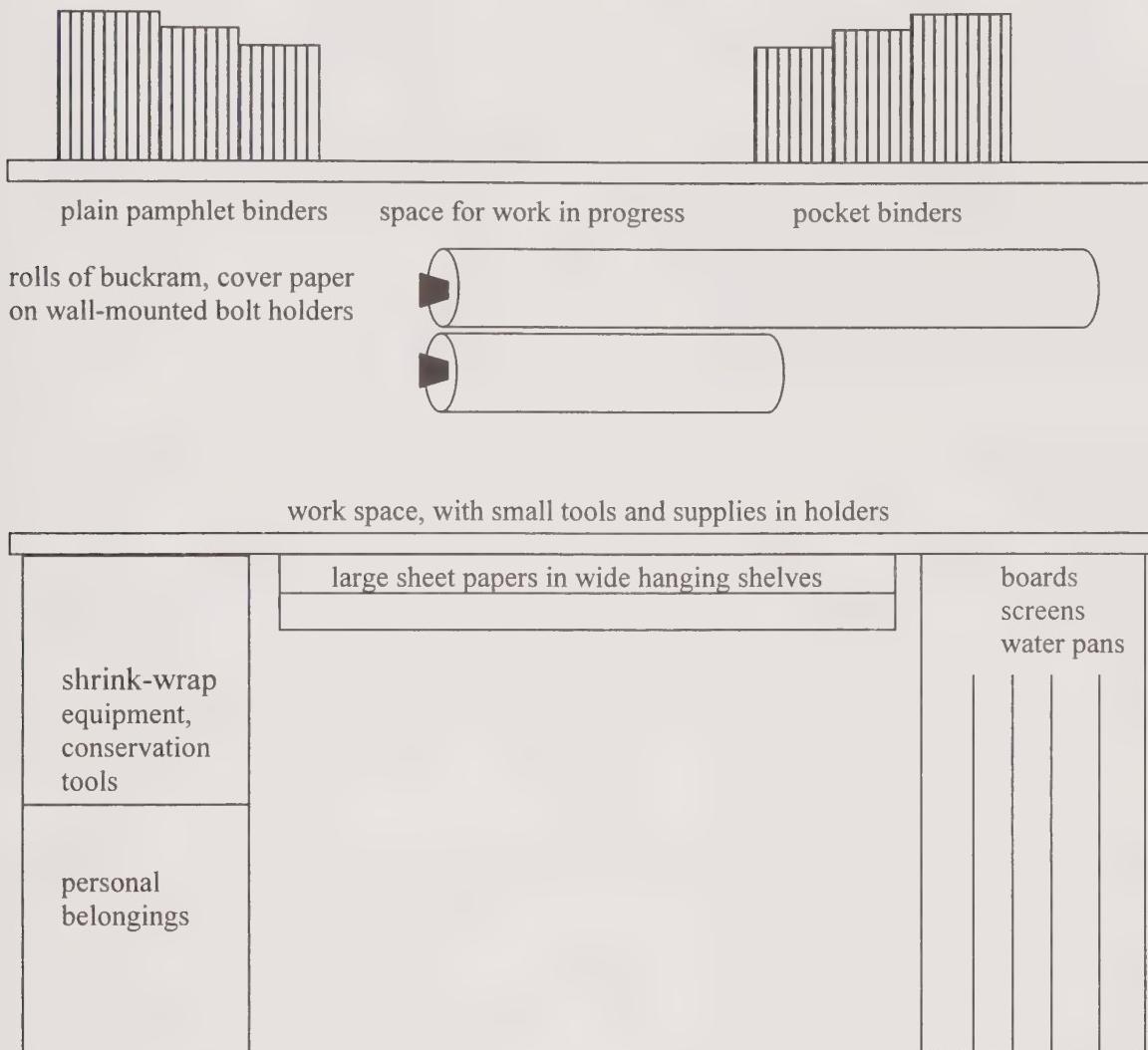
- electrical outlet
- erasers, preferably electric
- eraser brush
- binding knife

Optional for Conservation:

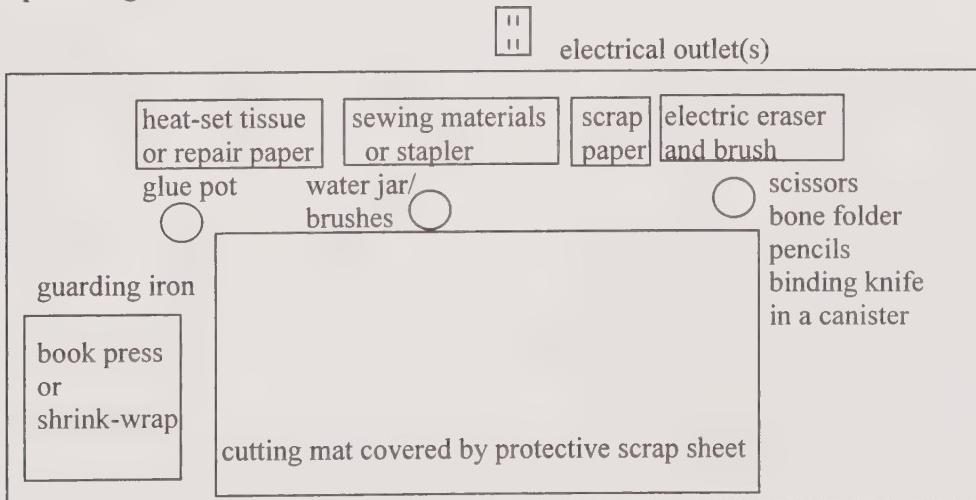
- Japanese repair papers
- cotton swabs
- wheat paste
- tape solvents and heat tool
- cotton balls
- latex (or other plastic) gloves
- charcoal filter mask
- large water pans
- filtered or bottled water
- large screens
- blotting paper
- large particle-board shelf boards (for drying sheets under weight)
- book press
- brass-edged book boards
- job backer (vertical press)
- wax for thread

Sample Workstation for Binding and Conservation

The shelving and storage components available at large hardware stores will probably be more adaptable to the purpose than standard library furniture, except for the stool.



Sample Tabletop Arrangement



Sources for Supplies

Contact information for all companies mentioned is included in the next section of this appendix.

awls—bookbinding suppliers all carry varieties of awls. Those with heavy wooden handles are definitely preferable for pamphlet binding. One useful pairing of awls, a thin-shafted awl for the outer holes (buy two) and a stubbier-handled awl that can penetrate thicker signatures and makes larger holes, is available from Talas. X-acto makes a metal-handled awl that is cheaper than the wooden-handled ones, but these are uncomfortable to use where much pressure is required, such as for thick pamphlets.

backing hammer—available from bookbinder suppliers

beeswax—available from bookbinder and library suppliers

binding knife—available from bookbinder and library suppliers

blotter paper—available from bookbinder and library suppliers

boards—

- cover (Davey) board: available from bookbinder and library suppliers. A web search under “Davey board” will turn up suppliers and may be useful, since a supplier in your area may turn up and cut shipping costs for this heavy material.
- gray-white board: available from bookbinder and library suppliers. Most suppliers offer 0.060 board weight, but the rigidity is not necessarily the same. It is best to buy or request several samples and then buy in quantity the board whose balance of cost and rigidity is most acceptable for your library’s use. Hollinger’s 34" x 28" (actually about 27¾" wide) gray-white board happens to be a very good size for cutting into 11" x 14" pieces with little waste, but it is not rigid enough for pamphlet binding (besides which, the grain runs the wrong way for the cut described). However, it is acceptable, and the cheapest alternative, for shrink-wrap board supports.
- pressboard: available from bookbinder and library suppliers
- tan board: the best for use in handmade phase boxes is the 0.040 dark tan board (DTAB-3, confusingly) from Archival Products. Other 0.040 tan boards may be much harder to work with and may not be buffered.

board shear—board shears are better purchased used than new; not only are they less expensive, the older ones tend to be of a higher quality as well. Paul Brubaker’s Bindery Equipment is a source for used heavy equipment of this type.

bone folder—available both from bookbinder suppliers and library suppliers. The 6"-7" size with one pointed end and one round end offers the most versatility, and is widely available. Horn folders are also available, more expensive but more flexible than bone. Teflon folders are carried by some vendors for use with delicate papers; these are much more expensive and probably not needed for circulating library materials.

book press—these last forever and the old ones are thus surprisingly common at antique stores and junk shops; if you have time to search you can often find them for under \$100 this way. They are usually a good deal more expensive, but also in better condition, if purchased on-line or from binding equipment specialists such as Paul Brubaker. They come in a variety of sizes, and it is important to make sure that you buy one large enough both to accommodate full scores (a platen at least 10" x 14") and to fit thick books with the two boards needed for pressing in shoulders (at least 5" daylight).

brass edged book boards—available from bookbinder and library suppliers.

brushes—available from bookbinder and library suppliers. Note that you will want round brushes for most gluing, flat brushes for aqueous cleaning.

buckram—a major manufacturer supplying U.S. bookbinding and library suppliers has ceased production, so that many old colors are no longer widely available by the yard, but Talas does still carry many colors. Hewit, in the United Kingdom, has a full color line by the meter. Acrylic-sized cloth is still available, and

usually offered with the color codes familiar from library binders. Contact ICI for a supplier near you. Buckram is also available in rolls 4" wide from Gaylord and University Products.

bulldog clamp—the office clamps that have black U-shaped springs with wire "handles" that fold down are fine and are available from library and office suppliers; those that look like large metal clothes pins with plastic insulation on the clamping edges can be purchased at hardware stores.

caliper—available at art supply stores, or search online for "slide calipers."

center-sewn tape—available from library suppliers. The 1½" width is good for most music, but for large or heavy scores (e.g., folios) use 2" tape.

corner rounder—available from Talas

cutter/paper cutter—available from office and library suppliers. A sturdy one will be cost effective.

deacidification products—Bookkeeper spray is the simplest material to obtain for in-house deacidification, and it is available from bookbinder and library suppliers. Talas also supplies Wei-T'O spray (also highly recommended and cheaper than Bookkeeper spray) and the chemicals used in aqueous deacidification.

electric erasers—available at large art supply stores. Gaylord carries one model, but a web search for "electric erasers" will turn up more options. Other types of erasers can be found at art supply stores. Do not buy Art Gum for use on books or scores.

glue—all types (PVA, wheat paste, and methyl cellulose) are available from bookbinder and library suppliers.

It is usually not necessary to pay for museum-quality or other specialized adhesives for item-level binding and repairs of circulating materials, but different preparations will work better for different people and projects in different areas, so it may be worth trying several in small quantities. The two factors that will be important in PVA-type glues are the drying time of the preparation, which can be lengthened in dry areas by adding water or methyl cellulose glue, and the longevity of the adhesion, which can be addressed by reasonable care in purchasing a good product.

guillotine cutter—an internet search for "electric paper cutters" will turn up a gamut of models

headband—available from bookbinding and library suppliers

heat tool—Gaylord and University Products carry this tool, indexed under "tape removal"

imitation leather—available from bookbinding suppliers. Test a sample before ordering in quantity.

Japanese paper—available from bookbinding and library suppliers; always order a small sample to test shortly before ordering a larger amount

job backer—older cast-iron models may be ordered used from Paul Brubaker, or newer models, usually partly wooden, are available from bookbinder suppliers. A tubular steel unit designed after the older iron models is available from American Graphic Arts.

knives—available from bookbinding and library suppliers. None of the knives used for the binding and repair procedures in this manual will need sharpening; binding knives are supposed to be fairly dull to prevent accidental paper damage, and x-acto knife blades are disposable. Do be sure to change them often, especially those used for trimming paper edges and cutting board.

needles—the needles offered by Gaylord accommodate the thicker 18/3 thread and are thus on the large side for music binding; #3 (2¼") or #4 (1¾") needles offered by Talas are easier on the paper.

pamphlet binders—available from library suppliers; see chapter 3 for information about specific types

paper—

- For preservation photocopying, the standard to look for is "uncoated permanent book, white and cream white." The 70 lb. weight is recommended for library use with sheet music, though the 60 lb. weight is normally used by commercial companies that offer preservation photocopying, since they normally produce books that get less strenuous use. You may ask for 70 lb. weight from a preservation photocopy vendor, but will have to pay a good deal more for it. You do not have to buy book grade paper in the 25" x 38" standard size for in-house photocopy use. Library suppliers carry it in 11" x 17" sheets, or you can probably get it more cheaply in that size from a local paper distributor (in the yellow pages under "paper distributors"). They will probably have to order the 70 lb. weight.

- For the most cost-effective pamphlet covers and for wrapping sheet music for storage, be guided by your local paper distributor, having explained what you want, which is lightweight acid-free paper with high bursting and tearing strength indices, available in large sheet sizes. Otherwise, order the rolled paper from a library supplier. Heavier stock may be considered for covering parts that will be heavily used.
- Kraft paper will work best for protective scrap; even if it is acidic, it will not have a chance to acidify library materials, and the heavier weight makes it better than newsprint for protecting the work surface without wrinkling or bunching up.

pH pen—available from bookbinding and library suppliers; they should be changed twice a year, as well as any time a cap is accidentally left off.

PVA—see under glue.

rulers—the ideal is a stiff heavy metal ruler (wooden ones are a little thick but could be considered if edged with metal) with cork backing, but the thickness of the metal bar seldom shows in catalog pictures. The best way to get what you want is to buy it from a selection at an art supply store. For bindery purposes, 18" is the best length. T-rulers for phase boxes should be longer, and are also best found at art supply stores, though a cheap one will be adequate.

saddie stapler—the Acme Staple Company's model 731 appears to be the smallest manual saddle stapler that will be useable for stapling materials into rigid pamphlet binders up to 12" in width. Library suppliers carry it, but it will be significantly less expensive from the manufacturer. Note that smaller saddle staplers will be described as able to staple 12" from the edge of a paper, but this assumes that the paper can curl into the throat of the stapler, which rigid pamphlet covers cannot do.

scissors—specialized bookbinding shears are available from bookbinding suppliers, but the standard type of shears offered by other library suppliers and any art store actually work better for music binding needs. The larger 8"-9" size tends to be the most versatile, but some people may prefer smaller scissors.

screens—for air-drying paper the most cost-effective course is to have a 2' x3' (or other convenient size) framed screen made by a hardware store. The only special modification required will be to have feet added at the corners (3" pieces of 1" x 1" screwed on will be fine) if more than one screen is used, so that they can be stacked with extra air circulation between them. Unframed fiberglass screening can also be purchased from a hardware store.

shrink-wrap—the prevalence of "shrink-wrap" as a computer software security component complicates the internet search for suppliers of archival shrink-wrap material. A search for "archival shrink packaging" will work better. One distributor that offers a nice basic shrink-wrapping kit and also a good quality of polyolefin wrap is Pictureframe Products, Inc.

silicon release material—available from library suppliers. Make sure to buy the paper, not the plastic film, if that is also offered.

solvents—the regulation of solvent storage and disposal is becoming increasingly strict, and even the relatively tiny amounts of solvents used in tape removal may be difficult to obtain through standard institutional channels. Toluene is available by the quart in hardware stores (it is an important ingredient in paint removers and is marketed pure, as well). Once you have it, however, institutional regulations concerning storage and disposal will certainly be more strict than those for homeowners.

straightedge—there is no reason not to use a ruler for any purpose requiring a straightedge described in this manual, and rulers are certainly easiest to obtain. However, as noted in the citation for rulers, it is best to buy them from an art store, rather than from a catalog or on-line, so that you can tell for certain that the ruler does also possess the rigidity of a good straightedge.

super (also called gauze, mull, crash, and tarlatan) — available from bookbinding and library suppliers; get several samples and choose after trying them.

tan board—see **board**

tape—all of the types of tape described in this manual are available from library suppliers, including

- the perforated tape used for guarding the inner paper covers on pamphlets is produced and distributed by Gaylord; it does not appear in their archival catalog (since it is designed for the very nonarchival

hinge found in many older pamphlets) but is listed under "Tape, cloth" in the index for the full catalog. Tyvek tape is now recommended for reinforcing cover sheets.

- the single-stitched binder tape used in making custom pamphlet binders is also distributed by library suppliers, also indexed under "Tape, cloth"
- the best pressure-sensitive document repair tape is Filmoplast-P, available from library suppliers
- heat-set repair tissue may be purchased as $\frac{3}{4}$ " tape as well as in sheets, from library suppliers, along with the irons and silicone release paper needed to apply it properly

thread—for the pamphlet bindings described in this manual, using a double thread is important in itself, so choose the lighter of the two weights of thread normally offered by library suppliers—20/2 rather than 18/3. This will also work better for case bindings.

Tyvek—Tyvek tape is available from library suppliers. At this writing it is difficult to obtain a small amount of Tyvek in sheet form. Matthias Paper Corp., a company recommended by Dupont for such purposes, does not normally sell in retail quantities, and they know of no distributor currently selling Tyvek in sheet form. Their recommendation is to cut up Tyvek envelopes. Gaylord does sell sheet Tyvek in rolls, 30" x 50' for \$95/roll (summer 2002 price).

water—for soaking paper on a limited scale, the cheapest alternative is to use distilled water purchased at a grocery store

water filters—Barnstead offers a good water purification system

weights—library and bookbinder suppliers carry small sacks filled with lead pellets, but bar weights are recommended if they can be found. Gaylord is adding them to their 2003 Archival catalog.

wheat paste—see **glue**

x-acto knives— see **knives**

Bookbinding and Library Suppliers

Acme Staple Company

87 Hill Road

Franklin, NH 03235

603-934-2320 • 800-258-3778 • FAX 603-934-6199

http://www.acmestaple.com/products/model_731.html (28 June 2002)

(saddle stapler)

American Graphic Arts, Inc.

150 Broadway

Elizabeth, NJ 07206

(908) 351-6906

<http://www.agamachinery.com> (19 August 2002)

(job backer)

Barnstead International

2555 Kerper Boulevard

P.O. Box 797

Dubuque, IA 52001-1478

(800) 446-6060 (7:30 am-5:00 pm CST)

Fax: (563) 589-0516

<http://www.barnsteadthermolyne.com/labline1.cfm?ProdLine=Barnstead> (28 June 2002)

(water purification)

BookMakers

6701B Lafayette Avenue

Riverdale Park, MD 20737

(301) 927-7787

<http://www.bookmakerscatalog.com/>

(bookbinding and conservation supplies)

Document Reprocessors

(800) 437-9464 (nationwide 24-hr. line)

West Coast:

San Francisco Office

1384 Rollins Road

Burlingame, CA 94010

(650) 401-7711

East Coast:

New York Office

5611 Water Street

Middlesex, NY 14507

(716) 554-4500

<http://www.documentreprocessors.com> (5 July 2002)

(disaster recovery)

Gane Brothers & Lane, Inc.

several regional offices nationwide

<http://www.ganebrothers.com/> (28 June 2002)

(buckram)

Gaylord Bros.

P.O. Box 4901

Syracuse, NY 13221-4901

(800) 448-6160

<http://www.gaylordmart.com/> (28 June 2002)

(library supplies—probably the best single source)

LBS

P.O. Box 1413

Des Moines, IA 50305-1413

(800) 247-5323

<http://www.lbsbind.com/>

(buckram)

Matthias Paper Corp.

1927 Baker Rd.

High Point, NC 27263

Neal Dagenhart, company contact

(800) 334-6791

Paul Brubaker

Bindery Equipment

274 Ridge Ave. (mailing)

2350 Division Hwy. (shipping)

Ephrata, PA 17522

(717) 354-3091

(877) 507-0440 (orders only)

<http://www.handbookbindingequipment.com/> (27 June 2002)

(board shears, book presses, job backers)

Pictureframe Products, Inc.

34 Hamilton Road

Arlington, MA 02474

(800) 221-0530

Fax: (781) 648-3940

<http://www.pictureframeproducts.net/products.htm#pro-wrapper> (28 June 2002)

(shrink-wrap)

Talas

568 Broadway

New York, NY 10012

(212) 219-0770

<http://www.talas-nyc.com/> (28 June 2002)

(bookbinding supplies—probably the best single source)

University Products

517 Main Street

Holyoke, MA 01040-0101

(800) 336-4847

<http://www.universityproducts.com> (28 June 2002)

(library supplies)

Information Resources

American National Standards Institute

Administrative offices:

1819 L Street, NW, Suite 600

Washington, DC 20036

(202) 293-8020

fax: (202) 293-9287

information line (at New York office): (212) 642-4900

<http://www.ansi.org/> (19 August 2002)

Bowker's Global Books in Print

<http://www.globalbooksinprint.com/GlobalBooksInPrint/> (25 October 2002)

(for book replacement searches)

BRITTLE-L

<http://www2.lib.ku.edu/preservation/Brittle.html> (5 July 2002)

(electronic mailing list for libraries collaborating on commercial preservation duplication of volumes)

Conservation OnLine (CoOL)

<http://palimpsest.stanford.edu/don/don.html> (3 July 2002)

(conservation information)

J. W. Pepper

<http://www.jwpepper.com> (25 October 2002)

(distributor for many, but not all, music publishers; a good first stop for finding replacement scores in print)

Library Binding Institute

70 East Lake Street, Suite 300

Chicago, IL 60601-5907

(312) 704-5020

<http://www.lbibinders.org>

(standards and information regarding library binding)

Music Library Association

<http://www.musiclibraryassoc.org/> (25 October 2002)

(the electronic mailing list is a good source for hard-to-find information about music in general)

Music Publishers' Association

<http://www.mpa.org> (25 October 2002)

(has up-to-date information regarding most American publishers)

National Information Standards Organization

4733 Bethesda Avenue, Suite 300

Bethesda, MD 20814

(301) 654-2512

<http://www.niso.org> (19 August 2002)

Solinet

1438 West Peachtree Street NW, Suite 200

Atlanta, GA 30309-2955

(800) 999-8558

<http://www.solinet.net>

(information about library preservation, materials, workshops, etc.)

A good resource of theirs that is difficult to locate by surfing the site is a “leaflet” with contact information for other suppliers and services, at (3 July 2002):

http://www.solinet.net/preservation/leaflets/leaflets-fs.cfm?leafletpgname=leaflets_templ.cfm?doc_id=110

Worldwide Internet Music Resources (Indiana University)

http://www.music.indiana.edu/music_resources/publ.html (25 October 2002)

(has information for many non-U.S. music publishers)

Sample Preservation Policy

The material in this section includes extracts from Sibley Music Library preservation policy documents from which very library-specific details have been deleted or altered to make them more general in scope. Depending on the circumstances of the individual library, the final results may be very different from the Sibley statements in outline as well as detail, but having some sort of written policy is very strongly recommended. The mission, vision, and goal statements reprinted immediately below outline desired outcomes. They are a necessary precursor to formulating the actual policy statement, which prescribes responses to particular situations such as new bindings, preservation issues, and disaster planning. Once again, both statements, and especially the goals, may be much more specific than the example printed here and may include references to time of completion and criteria of success, which will increase their effectiveness. The complementary statements are both valuable and should be reviewed periodically both to assess the success of the policy in meeting the goals and for perspective in formulating responses to changing circumstances such as library automation and new score formats (e.g., electronic and self-published). Original copies of the final statements should be archived in some way, but it will also be helpful for incoming conservation staff if both statements are updated periodically to reflect changes in library practice. One other document that was produced during the Sibley policy formation has not been reproduced here but was also extremely valuable: it consisted of a very detailed description of what operations actually occurred in the library at the time the policy was formed, and was created by staff people keeping journals of their activities for a period of nearly a month. This step should precede the discussions concerning mission, vision, and goals as it will help keep those discussions tied more closely to the actual life of the library. Policies that are not grounded in actual practice will probably not have much impact and may do more harm than good.

Mission, Visions, and Goals

The mission of the Sibley Music Library Conservation Department is to keep the Sibley collections available to patrons in appropriate formats for performance, study, and research, both in the present and for the future.

Visions and goals:

- I. Temperature, humidity, pollutant levels, pests, and light in stacks are kept at nonharmful levels.
 - A. Vault area is monitored continuously, stacks on humidity alarm system, with set points of 70° and 40% humidity and permitted variability of 2° and 10%, respectively.
 - B. A seasonal (4x/yr) monitoring of temperature and humidity in the stacks is conducted every five years.
 - C. UV levels are monitored every five years and fluorescent light shielding replaced as needed.
 - D. Pollutants are monitored if indicated (smell, dust or coatings on surfaces); the stacks are dusted on a continuous rotation basis.
 - E. Staff and patrons are informed by signs how to report on any pests found in the library.
- II. If a disaster happens, staff can respond quickly and adequately regardless of the time of day or year.
 - A. The conservator reviews disaster plan annually, compares with current literature, and apprises at least two other building staff people of any changes made.
 - B. The phone list of key service contact people is updated annually.
 - C. The Disaster Response Guide is reviewed with staff annually, and the staff phone tree updated.
 - D. The disaster plan is reviewed and a desk-top disaster drill is conducted each time the Conservator, Public Services Director, Librarian, or Physical Plant Director position changes personnel.
- III. The appropriate use of each item in the collection is determined by policy and communicated to patrons and staff.
 - A. Preservation policy relates type of item (age, value, condition) and type of use (performance, studio practice, class use, reference use, scholarly reference) to level of stabilization, format, housing, and access level.
 - B. Binding and labeling of items clearly indicates the type of circulation and use expected.
 - C. Students and faculty understand how scores of different types are expected to be treated, and have input into preservation policy decisions when appropriate.
 - D. Patron education keeps casual vandalism to a low level, and supports appropriate use.
- IV. Each item is stabilized, housed, and accessible appropriately to its level of intended use.
 - A. Deacidification criteria are included in the preservation policy.
 - B. The Brittle Book (BB) file is annotated about instances of apparent inappropriate use and binding failures.
 - C. The BB file is reviewed in preparation of the Conservation annual report to look for trends or problem areas.
 - D. Pro-active conservation/preservation projects are conducted as time and finances allow, based on the results of BB file review or needs and opportunities of library or school.
 - E. A condition survey is conducted every fifteen to twenty years to determine how closely materials in stacks accord with the ideal of preservation policy.
- V. New items are stabilized and housed in ways that prevent their needing conservation unless abused.

- A. A record-keeping system allows sample new bindings and repair solutions to be checked every decade for actual longevity.
- B. Students sign and date new in-house bindings for quality control.
- C. BB file annotations and sample studies help to evaluate effectiveness of new binding types.
- D. Deacidification policy and gutter mark help to select new items for routine deacidification when appropriate.

VI. Irreplaceable brittle editions are appropriately stored and have suitable substitutes in circulation.

- A. The preservation policy includes duplication, reformatting, housing, and storage, reviewed as needed.

VII. Items in treatment can be made available quickly on demand.

- A. Staff are familiar with the locations denoted by OPAC temporary location notes.
- B. Students and staff can apply temporary locations correctly as needed, and do so habitually as part of the regular work flow.
- C. Items in temporary locations are shelved in call number order in locations where backlogs exist.

VIII. Malicious vandalism and theft can be prevented and/or traced and stopped.

- A. Security procedures are reviewed periodically, with literature search for new ideas.

IX. The Conservation Department is up to date on useful new technologies, trends to watch and fads to avoid.

- A. Abbey Newsletter, MLA-L, ConsDist list, CoOL and PADG-L are reviewed and integrated into the preservation policy as indicated.
- B. The Music Preservation Workshop is held annually in-house and resources are made available for other educational opportunities elsewhere for conservation staff and other library staff.

Conservation and Preservation Policy

The goal of preservation at Sibley Music Library is to maintain a wide variety of music, including both non-standard repertory and a broad spectrum of critical and performing editions, as well as a representative collection of literature relating to music.

Circulation Restrictions and Shelving

Most new books and scores are circulated to all patrons and shelved on normal shelving. The exceptions are: Rare items are sent to the vault. Books and scores with reference use (including monuments and collected editions as well as materials shelved in the Reference collection) are circulated within the library only except for classroom use. Items over sixty years old are normally restricted to use within the library except by faculty. Items that are out of print and/or unusual in some other way will be considered for circulation restriction on a case-by-case basis. Items that are fragile are sent through the Brittle Book work flow. Scores with a height or width of 36 cm. or more are shelved on Folio shelving. Scores with a height of 25 cm. or less are shelved in the Miniature Score area. Folios and Miniature Scores follow the same circulation policies as other scores.

New Bindings

Pamphlet scores are bound into pamphlet bindings using Sibley's standard procedures for page attachment and binding, as detailed in the bindery manual. Case-bound scores are reviewed on a case-by-case basis but will normally be shelved as received unless the binding is very bad or the expected use is unusually demanding. Soft-cover signature-bound scores are sent for library binding (sew through fold or recase) as soon as they are cataloged. Other soft-cover scores are reviewed and treated on a case-by-case basis and bound as follows: staples, tape, spiral and comb bindings are removed, scores with more than sixteen sheets (about thirty-two pages) are sent for library adhesive binding, scores sixteen sheets or under are guarded into a single signature and pamphlet-bound; perforated scores (spirals or combs) may either have the holes cut off before binding or be bound with the holes, or photocopied onto new paper, depending on the amount of margin on the score and the type of use expected. Case-bound books are shelved as received. Soft-cover books are shelved as received, with a stamp on the date due slip requiring that they be sent for library binding after they have circulated twice. The conservator and bindery supervisor have the authority to send any soft-cover book for immediate binding if they feel that it is indicated either by expected use or inability to stand upright on a shelf. Periodicals are collected and sent for library binding on a schedule suited to their size and use patterns. The library binder is instructed not to trim materials, to contact the library if any binding instructions are unclear or problematic, never to cut off the spines of materials bound in signatures without the explicit item-by-item consent of the conservator or bindery supervisor, and to return materials unbound for further in-house work (i.e., signature preparation) if they cannot be sewn through existing folds.

Deacidification

All incoming materials are tested for acidity. Acidic materials are reviewed for deacidification as follows: The first copy of any score will be deacidified if the paper is not coated and survives a double-fold test twice. Large folio scores will be deacidified in-house using the Bookkeeper spray installation, as will scores that do

not survive the second double fold. The first copy of a book (i.e., texts rather than music) may be deacidified as resources allow if the paper is not coated and survives a double-fold test twice. Added copies of scores may be considered for deacidification, but are not routinely treated. Periodicals are not deacidified on receipt, but will be considered for retrospective projects. Retrospective deacidification projects are developed for grants and include monumental and collected works editions, other critical editions, out-of-print materials, and scores collected by subject area. The next priority for retrospective selection is music-related periodicals and books that are not commonly held by libraries. All deacidified copies are marked with a label in the item and a note in the item record for that copy. If a deacidified copy is withdrawn without a new replacement being purchased, another copy will be considered for treatment.

Repair and Replacements

Scores that are not brittle will be repaired as necessary, unless the cost of the repair would be comparable to that of a new replacement. High quality and unusual editions will be replaced if need be (for brittleness or extensive damage) with near or exact duplicates, either by purchase or by reproduction. Poor quality, common editions may be replaced with high quality publications when economically feasible, particularly when a better edition is found to be lacking in the collection. Items for which reformatted substitutes are supplied are withdrawn from circulation and placed in storage. Unusual items may be removed to storage, with or without replacement, with the proviso that they remain available for reference. Duplicate items may be discarded without replacement, depending on usage; up to three duplicate copies of standard repertory scores should be kept available in sturdy copies. Items beyond the scope of the collection are replaced very selectively.

The Conservator is responsible for the disposition of most items, in consultation with other librarians and faculty as needed. Scores are repaired in-house if repair is possible, unless the repair would cost more than the purchase of a new copy, in which case the score is treated as brittle. Scores that are photocopied are normally treated as preservation masters, placed in storage and withdrawn completely from circulation, to be used only if the copy is lost or destroyed. In practice, this means the following for scores selected through use:

Standard repertory scores

Standard repertory scores are normally replaced, with identical or better editions. The representation of that work in the library collection is assessed by the conservator, who will suggest further purchases to the Acquisitions Department if indicated by the library search. If a standard repertory score is duplicated by sturdy copies of the same edition and the work is also well represented by other editions in print, it may be discarded without replacement.

- If the score is replaced with an identical edition in print, the original is discarded.
- If a score is replaced with a different edition, it is usually stored, unless the original is still in print and the alternate edition was chosen as preferable. In some cases another identical copy in better condition might be moved from the circulating collection to restricted circulation, and the brittle copy discarded; in other cases, all brittle copies may be pulled and replaced, one being stored and the rest discarded.
- If the brittle edition is of better quality than any currently available in print and is out of copyright, it may be copied rather than being replaced by a new purchase, even though it may cost more to copy it. In this case the original will be stored. Except for this, scores are replaced by purchase in preference to copying, to encourage publishers to keep scores in print.

Less common scores and books

Less common scores and books are generally replaced unless: they are specifically excluded in the library's collection development policy (e.g., elementary methods); are inordinately expensive to purchase or copy, and the expected use of the original does not preclude circulation restrictions, are duplicated by sturdy copies, or will be replaced by other means, such as part of a complete works subscription.

- If the score can be replaced with any edition in print, it normally will be. If the replacement is identical, the brittle score will be discarded; if different, it will normally be stored, available for scholarly use in-house.
- If the score cannot be replaced in print and is less than thirty-two pages long, it will be copied in-house. The original will be stored, withdrawn from circulation.
- If the score cannot be replaced in print and is more than thirty-two pages long, it will be copied, either in-house or by a commercial preservation photocopy firm, unless the expense of the copy will seriously outweigh the expected use. In that case, the brittle score will be removed to storage or Rare Books but kept available for in-library use (unlike scores that are copied). If such a score is requested by a patron, it will be reconsidered for copying.

Storage

The storage area is part of the main library building and shares the same temperature and humidity control. Items shelved in the storage area are shelved as is if the bindings are sound. Those with loose pages are placed between rigid buffered boards and wrapped with shrink-wrap or paper. Materials that have not been withdrawn from circulation may be stored in portfolio or custom bindings if occasional use is expected.

Record Keeping

The following types of information are needed in the course of replacing a score and tracking it through the replacement process. At Sibley, records are currently kept in an Access database separate from the OPAC due to the greater ease in running reports and printing forms. For any score or book that cannot be treated on the spot, a treatment slip is printed out as a database form and routed with the copy under treatment. Sample slips are included below. The field names are presented as full coherent phrases below, though many actually appear in the database as abbreviations or acronyms.

- date in The date the item came into system is useful for tracking special requests, making annual reports and keeping an ongoing sense of the pace of the program.
- source A blank field = use-based selection; others include special requests, ILL, gifts and acquisitions, "BB" = materials pulled during a brittle book evaluation, "lost," "lost parts," "stolen," etc.
- bar code bar code number from item
- call no This and the following bibliographic information are duplicated in the Sibley brittle book database records to make them easier to find during the search process.
- author taken from item or from bib record
- title This field includes all important format details, e.g., "min. score," "vocal score," "vln/pno," "pno 4-hands arr.," etc.; the accuracy of the actual title is less important
- publisher/date Taken from the item or the bib record; needed for finding replacements
- editor Only included if the edition is an important consideration
- format In the Sibley database this refers to binding style—pamphlet, adhesive, signatures, comb, etc., and also the number of parts.
- department This field is used in preparing ARL statistical reports: bb = brittle work flow, cons1 = less than 20 minutes' conservation treatment, cons2 = 20 minutes - 2 hours, cons3 = over 2 hours conservation treatment.

- treatment This field records the actual preservation or conservation treatment suggested on first evaluation. During the course of treatment, the decision may sometimes change (a spine replacement becomes a recase, a replacement ordered new is unavailable, etc.) and the field is normally updated when the work is complete. In the Sibley database, in-house photocopies are termed "photo" in this field, while commercial photocopies are called "facsimiles," for ease of reporting.
- notes: This field records both replacement information and comments of all sorts, e.g., "Breitkopf EB 3055 \$13.95" or "can we separate the two works bound in this cover when we photocopy them?" or "replacement page ordered ILL 10/15/00" or "score loaned to patron 5/27/01." It would probably work better if separate fields were used for some of these purposes.
- routing Sibley includes separate date fields for "to vendor," "dupe back," "original back," "sent for correction," "dupe sent to ILL," "original returned to shelf" (mostly used for items removed from the vault for filming), and "to cataloguing"; the latter is now seldom used, since items are tracked inside the library with temporary locations on the OPAC.
- accounting Sibley uses separate fields for "invoice number," "invoice approved (date)," and amounts charged to specific grants or ledger lines.
- forms use Sibley also uses separate fields in the access database for specific information used on forms, including "vendor tracking number" for all items sent for commercial preservation work, "RLG format," "RLG size," and "value," for items sent for filming.
- date out: When work is complete the electronic record is checked for accuracy and then the paper tracking form is discarded. Periodically records whose "date out" field is not null are moved to another table ("BB Closed") to keep the active BB table from becoming unwieldy.

Sample Forms

The forms reprinted on the following pages are copies of Access database forms recast in a word processing program and altered slightly for general use. Note that if the tops of the sheets are cut off when the sheets are filled out, the call number will protrude visibly from the top of the item into which the sheet is inserted, which may be very useful for older items with worn labelling, as well as for reproductions that do not yet have labels produced.

..... cut top of sheet along dotted line

call number _____

BRITTLE BOOK WORK FORM

date in:

bar code _____

Author:**Source:****Title:****Publisher/date:****Editor:****Format:****Notes:****IN LIBRARY SEARCH (include similar items)****Call no:****Format/Editor:****Publisher/date or plate no.:**

c.1 condition:

c.2 condition:

c.3 condition:

Call no:**Format/Editor:****Publisher/date or plate no.:**

c.1 condition:

c.2 condition:

c.3 condition:

Call no:**Format/Editor:****Publisher/date or plate no.:**

c.1 condition:

c.2 condition:

c.3 condition:

DISPOSITION

(cataloger initial and date when complete)

- | | |
|---|--------------------------------------|
| <input type="checkbox"/> Rare Books | <input type="checkbox"/> Loc. change |
| <input type="checkbox"/> Replace | |
| <input type="checkbox"/> Discard | <input type="checkbox"/> Discarded |
| <input type="checkbox"/> Storage | <input type="checkbox"/> Loc. change |
| <input type="checkbox"/> Storage Withdrawn | <input type="checkbox"/> Loc. change |
| <input type="checkbox"/> Microform | |
| <input type="checkbox"/> Photo here | |
| <input type="checkbox"/> Facsimile | |
| <input type="checkbox"/> Digitize | |
| <input type="checkbox"/> Return to shelf (route back to Conservation) | |

ACQUISITIONS Please order the following:

Publisher: _____ Catalog or source: _____
 Title: _____ Editor: _____ Format: _____
 Catalog no.: _____ Price: _____

..... cut top of sheet along dotted line

call numbertreatment

CONSERVATION TREATMENT FORM

bar code:

Author:

Title:

date in:

cons treatment level _____
(1 = <20 minutes, 2 = 20 minutes-2 hours, 3 = >2 hours)

Notes:

[This form can also be folded so that both the call number and the suggested treatment show at the top of each score or book while it is on the shelf.]

Disaster Planning and Music

Much information is available to help libraries of any type plan for disastrous events ranging from fires and floods to summertime HVAC failures. The additional needs for planning related to musical materials are covered in this appendix, but a few basic planning tips that are not explicit in every disaster planning manual are included as a preface:

- A functional building disaster plan cannot be created in isolation; all institutional levels and local emergency organizations must be consulted in planning.
- The insurance plan covering each collection must be consulted carefully and its requirements included in response procedures.
- At least three people in each library building should be thoroughly acquainted with the disaster plan and review it once a year to see if anything has been or needs to be changed, especially if the plan has been created by someone outside of that building.
- The response roster should be reviewed every time there is a staff change, and also annually (since off-site emergency staff may change as well).
- A disaster plan orientation, including memorizing the numbers to call in the event of unexpected occurrences, should be included as part of the training process of all new staff, particularly including students and other junior staff who will be working alone during evening and weekend hours.

There are a few considerations specific to music collections, which usually include a wide variety of formats and media. Folio scores will not fit into the boxes normally used to pack wet books and the plastic sheets supplied with disaster kits for laying between or wrapping around books will be too small for most scores in general. For these reasons, it is advisable to find a source for wider trays, such as those used in supermarket bakeries, and to include rolled freezer paper in the disaster materials. Otherwise, treatment of scores is similar to that of books and treatment of pamphlets is similar to that of manuscripts. Music has the added advantage that it is seldom published on glossy clay-finished paper.

Special account must be taken of other formats. Unfortunately, there is no unanimity of advice regarding treatments. It is not generally advisable to freeze wet media since most involve some sort of lamination which may be disrupted or distorted by the stress of freezing and thawing and the formation of ice crystals. Flood-damaged videotapes, however, are successfully salvaged by one company that routinely freezes them for storage before treatment.¹ Because this company utilizes freezing as a response procedure for water-damaged video tape, it might be expected to work with some other electronic tape-carried media. On the other hand, freezing would almost certainly destroy many older sound-disc media (the lamination of 78s is often delicate, and shellac disks would be likely to shatter) and would also be inadvisable for CDs. Any application of heat is also strongly discouraged, as with paper.

For solid sound and electronic media (disc and cylinder recordings, CDs and DVDs, and other computer disc media) that become saturated, the general recommended response is to store them in cold water while freezing any accompanying paper materials that have already become detached and contacting a restoration service as soon as possible. Their eventual recommendation will probably be to clean the sound media while wet under gently running water, wipe them dry and then air-dry them, so if it is impossible to store the materials in water, this process will be the next best alternative. Paper materials that remain adhered to media mate-

rials should be kept with them until a restoration conservator can be consulted; it will not further damage the paper and it is important to keep media and their labels connected as closely as possible until the best means is determined for keeping them coordinated during salvage. If the labels are already detached but it is still apparent from their position what media objects they belong to, a large amount of time will be saved in post-processing if the media objects are identified in some way. The usual recommendation is to mark the recordings with grease pencil in a spot that will eventually be covered by the returned label.

Microfilm has one specific resource available: Kodak offers free disaster recovery treatment for any Kodak roll film, 16 or 35 mm. They will also treat other formats and roll film from other manufacturers, for a charge. The number for their microfilm recovery service is (800) 352-8378. This service does not handle photographic paper prints or negatives, however, and for these a local film service will be a better resource.

Note

1. Document Reprocessors, whose contact information is included in appendix B.

Bibliography

Cunha, George Martin, and Dorothy Grant Cunha. *Conservation of Library Materials: A Manual and Bibliography on the Care, Repair, and Restoration of Library Materials.* 2nd ed. Metuchen, N.J.: Scarecrow Press, 1971-72.

This is a very thorough-going treatment of the subject of library conservation by two of the pioneers in the field. It may be somewhat intimidating to the novice and includes material more appropriate to rare book conservation than to that of circulating collections but is an excellent reference resource.

DePew, John N. *A Library, Media and Archival Preservation Handbook.* Santa Barbara: ABC-CLIO, Inc., 1991.

Mr. DePew's book is an excellent introduction to all facets of binding, conservation and preservation of library materials. It also includes specific directions for aqueous deacidification.

Greenfield, Jane. *Books: Their Care and Repair.* New York: H. W. Wilson Company, 1983.

Another good introduction to bookbinding and repair. Ms. Greenfield gives explicit directions for the hinge-type tip-in.

Jones, Maralyn, compiler. *Collection Conservation Treatment: A Resource Manual for Program Development and Conservation Technician Training: Including Report on Training the Trainers, a Conference on Training in Collection Conservation, April 28-May 2, 1992.* Berkeley: Conservation Department, the Library, University of California, 1993.

This is a fascinating compilation of documents describing actual procedures used by different libraries to address specific problems of binding and conservation. It demonstrates very well how different libraries will have different needs that will give rise to different procedures.

Morrow, Carolyn Clark, and Carole Dyal. *Conservation Treatment Procedures: A Manual of Step-by-Step Procedures for the Maintenance and Repair of Library Materials.* Littleton, Colo.: Libraries Unlimited, Inc., 1982, 1986.

This standard manual of library repair is more applicable to books than scores, as some of the procedures will produce less sturdy repairs than those in the present manual. In particular, in the method given for recasing, the cover and endleaves are attached to the book block only by glue on the spine with no supportive sewing. This is acceptable and common for book repair (and less time consuming) but may not be sturdy enough for scores.

Roberts, Matt T., and Don Etherington. *Bookbinding and the Conservation of Books: A Dictionary of Descriptive Terminology.* Washington, D.C.: Library of Congress, 1982.

As noted in the glossary, this is not so much a manual as a dictionary of binding terms. It is now out of print but available on-line at <http://palimpsest.stanford.edu/don/don.html> (5 July 2002).

Trinkaus-Randall, Gregor. *Protecting Your Collections: A Manual of Archival Security.* Chicago: Society of American Archivists, 1995.

Although the problem of library security is not addressed in this manual, there being is no aspect specific to music, this resource is worth mentioning here as an asset to preservation policy formation.

Young, Laura S. *Bookbinding & Conservation by Hand: A Working Guide.* New Castle, Del.: Oak Knoll Press, 1981, 1995.

This book is a standard introduction to bookbinding and repair. It will be confusing to readers of the present manual, however, since it is geared toward “edition binding,” the preparation of books for private use, which involves somewhat different equipment and procedures from in-house library binding and conservation.

Zeier, Franz. *Books, Boxes and Portfolios: Binding, Construction and Design Step-by-Step.* Translated by Ingrid Li. New York: Design Press, 1990.

Mr. Zeier’s book is aimed primarily at the home bookbinder, but his close attention to the most basic details of working with paper materials and his interest in working with minimal equipment make the volume very valuable to anyone needing to learn and apply binding and conservation techniques without much equipment or face-to-face instruction.

About the Author

Alice Carli is the Conservator at the Sibley Music Library of the Eastman School of Music, University of Rochester, where she completed requirements, except for the dissertation, for a degree in Musicology before leaving the program to continue her full time work at the library and raise a family. She began working in the Conservation Department at the library as a student under the tutelage of Dr. Sion Honea, eventually joining the library staff as Bindery Supervisor in charge of new bindings and conservation treatments and then following Dr. Honea as Conservator in 1995. The present Manual is drawn in part from a departmental manual that she wrote in 1994 while Bindery Supervisor. Mrs. Carli also teaches an annual summer course in music binding, conservation and preservation at the Sibley Library.

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The fields of library conservation and music publishing are both changing rapidly, but performers will continue to need library access to sturdy printed scores, especially of music by lesser known and emerging composers. The goal of *Binding and Care of Printed Music* is to present cost-effective, archivally sound practices for new binding and repair of older scores.

It is a necessary reference for music librarians who need to gain specific skills and new perspectives on the central issues of binding and care of music, and for self-publishing composers who wish to make their scores attractive to the music library market.

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